661FX-MLV
661FX-MLVE

Rev. A+
System Board
User's Manual

76110349

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Caution

To avoid damage to the system:

- Use the correct AC input voltage range.

To reduce the risk of electric shock:

- Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

Battery:

- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to the battery manufacturer's instructions.

FCC and DOC Statement on Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

2. Shielded interface cables must be used in order to comply with the emission limits.

Notice

This user's manual contains detailed information about the system board. If, in some cases, some information doesn't match those shown in the multilingual manual, the multilingual manual should always be regarded as the most updated version. The multilingual manual is included in the system board package.

To view the user's manual, insert the CD into a CD-ROM drive. The autorun screen (Mainboard Utility CD) will appear. Click the "TOOLS" icon then click "Manual" on the main menu.

System Board

This user's manual is for the 661FX-MLV and 661FX-MLVE system boards. The only difference between these boards is the 661FX-MLV system board is equipped with 2 SATA connectors that support RAID function.

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Chapter 1 - Introduction

1.1 Features and Specifications

1.1.1 Features

Chipset

- 661FX-MLV
  - North bridge: SiS® 661FX
  - South bridge: SiS® 964
- 661FX-MLVE
  - North bridge: SiS® 661FX
  - South bridge: SiS® 964L

Processor

The system board is equipped with Socket 478 for installing one of the following supported processors.

- Intel® Pentium® 4 Processor with Hyper-Threading Technology
  - 800MHz/533MHz system data bus
- Intel® Pentium® 4 Northwood processor
  - 533MHz/400MHz system data bus
- Intel® Celeron® Northwood processor
  - 400MHz system data bus

System Memory

- Two 184-pin DDR DIMM sockets
- Supports 4 banks up to 2GB using PC1600 (DDR200), PC2100 (DDR266), PC2700 (DDR333) and PC3200 (DDR400) unbuffered DDR SDRAM DIMM, 2.6V type
- 16Mb, 64Mb, 128Mb, 256Mb and 512Mb SDRAM technology with page size from 2KB up to 16KB

Expansion Slots

- 1 AGP slot
- 3 PCI slots

AGP (Accelerated Graphics Port)

AGP is an interface designed to support high performance 3D graphics cards. It utilizes a dedicated pipeline to access system memory for texturing, z-buffering and alpha blending. The universal AGP slot supports AGP 8x with up to 2132MB/sec. bandwidth and AGP 4x with up to 1066MB/sec. bandwidth for 3D graphics applications. AGP in this system board will deliver faster and better graphics to your PC.

Onboard Graphics Features

- Bi-directional 16-bit data bus
- Performs 1GB/s bandwidth in 133MHz x 4 mode
- 3D graphics accelerator
  - Built-in high performance 256-bit 3D engine
  - Supports Ultra-AGPII™ up to 2.7GB/s bandwidth
  - Up to 166MHz 3D engine clock speed
- 2D graphics accelerator
  - Built-in hardware command queue
  - Supports memory-mapped, zero wait-state, burst engine write
  - Maximum 128MB frame buffer with linear addressing

Onboard Audio Features

- AC'97 2.2 extension compliant codec
- Supports Microsoft® DirectSound/DirectSound 3D
- AC'97 supported with full duplex, independent sample rate converter for audio recording and playback
- S/PDIF-in/out interface
- 6-channel audio output

S/PDIF

S/PDIF is a standard audio file transfer format that transfers digital audio signals to a device without having to be converted first to an analog format. This prevents the quality of the audio signal from degrading whenever it is converted to analog. S/PDIF is usually found on digital audio equipment such as a DAT machine or audio processing device. The S/PDIF connector on the system board sends surround sound and 3D audio signal outputs to am-

plifiers and speakers and to digital recording devices like CD recorders.

6-channel Audio

The 6-channel audio output function is supported by using the audio jacks at the rear panel and configuring the audio driver. Please refer to chapters 2 and 4

Onboard LAN Features

- Phy fast ethernet controller
- Integrated IEEE 802.3, 10BASE-T and 100BASE-TX compatible PHY
- 32-bit PCI master interface
- Integrated power management functions
- Full duplex support at both 10 and 100 Mbps
- Supports IEEE 802.3u auto-negotiation
- Supports wire for management

SATA IDE Interface with RAID (661FX-MLV only)

Serial ATA is a storage interface that is compliant with SATA 1.0 specification. With speed of up to 1.5Gbps, it improves hard drive performance even in data intensive environments such as audio/video, consumer electronics and entry-level servers.

- Supports two SATA (Serial ATA) interfaces which are compliant with SATA 1.0 specification (1.5Gbps interface)
- Supports RAID 0, RAID 1 and JBOD

PCI Bus Master IDE Controller

- Supports ATA/33, ATA/66, ATA/100 and ATA/133 hard drives
- UDMA Modes 3, 4, 5 and 6 Enhanced IDE (data transfer rate up to 133MB/sec.)
- Bus mastering reduces CPU utilization during disk transfer
- Supports ATAPI CD-ROM, LS-120 and ZIP

USB Ports

The system board supports USB 2.0 and USB 1.1 ports. USB 1.1 supports 12Mb/second bandwidth while USB 2.0 supports 480Mb/second bandwidth providing a marked improvement in device transfer speeds between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

BIOS

- Award BIOS, Windows® 98SE/2000/ME/XP Plug and Play compatible
- Supports SCSI sequential boot-up
- Flash EPROM for easy BIOS upgrades
- Supports DMI 2.0 function
- 2Mbit flash memory

Desktop Management Interface (DMI)

The system board comes with a DMI 2.0 built into the BIOS. The DMI utility in the BIOS automatically records various information about your system configuration and stores these information in the DMI pool, which is a part of the system board's Plug and Play BIOS. DMI, along with the appropriately networked software, is designed to make inventory, maintenance and troubleshooting of computer systems easier.

Rear Panel I/O Ports (PC 99 color-coded connectors)

- 4 USB 2.0/1.1 ports
- 1 RJ45 LAN port
- 1 DB-9 serial port
- 1 DB-15 VGA port
- 1 DB-25 parallel port
- 1 mini-DIN-6 PS/2 mouse port
- 1 mini-DIN-6 PS/2 keyboard port
- 3 audio jacks: line-out, line-in and mic-in

I/O Connectors

- 2 connectors for 4 additional external USB 2.0/1.1 ports
- 1 front audio connector for external line-out and mic-in jacks
- 1 CD-in internal audio connector
- 1 S/PDIF-in/out connector
- 2 SATA connectors (661FX-MLV only)
- 2 IDE connectors
- 1 floppy drive connector
- 2 ATX power supply connectors
- CPU fan and chassis fan connectors

PCB

- 4 layers, microATX form factor
- 24.4cm (9.6") x 20cm (7.87")

1.1.2 Intelligence

Dual Function Power Button

Depending on the setting in the "Soft-Off By PWRBTN" field of the Power Management Setup, this switch will allow the system to enter the Soft-Off or Suspend mode.

Wake-On-Ring

This feature allows the system that is in the Suspend mode or Soft Power Off mode to wake-up/power-on to respond to calls coming from an external modem or respond to calls from a modem PCI card that uses the PCI PME (Power Management Event) signal to remotely wake up the PC.

Important:
If you are using a modem add-in card, the 5VSB power source of your power supply must support a minimum of ≥720mA.

Wake-On-LAN

This feature allows the network to remotely wake up a Soft Power Down (Soft-Off) PC. It is supported via the onboard LAN port and via a PCI LAN card that uses the PCI PME (Power Management Event) signal. However, if your system is in the Suspend mode, you can power-on the system only through an IRQ or DMA interrupt.

Important:
The 5VSB power source of your power supply must support ≥720mA.

Wake-On-PS/2 Keyboard/Mouse

This function allows you to use the PS/2 keyboard or PS/2 mouse to power-on the system.

Important:
The 5VSB power source of your power supply must support ≥720mA.

Wake-On-USB Keyboard/Mouse

This function allows you to use a USB keyboard or USB mouse to wake up a system from the S3 (STR - Suspend To RAM) state.

Important:
- *If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the 5VSB power source of your power supply must support ≥1.5A.*
- *If you are using the Wake-On-USB Keyboard/Mouse function for 3 or more USB ports, the 5VSB power source of your power supply must support ≥2A.*

RTC Timer to Power-on the System

The RTC installed on the system board allows your system to automatically power-on on the set date and time.

ACPI STR

The system board is designed to meet the ACPI (Advanced Configuration and Power Interface) specification. ACPI has energy saving features that enables PCs to implement Power Management and Plug-and-Play with operating systems that support OS Direct Power Management. Currently, only Windows® 98/2000/ME/XP supports the ACPI function. ACPI when enabled in the Power Management Setup will allow you to use the Suspend to RAM function.

With the Suspend to RAM function enabled, you can power-off the system at once by pressing the power button or selecting "Standby" when you shut down Windows® 98/2000/ME/XP without having to go through the sometimes tiresome process of closing files, applications and operating system. This is because the system is capable of storing all programs and data files during the entire operating session into RAM (Random Access Memory) when it powers-off. The operating session will resume exactly where you left off the next time you power-on the system.

Important:
The 5VSB power source of your power supply must support ≥1A.

AC Power Failure Recovery

When power returns after an AC power failure, you may choose to either power-on the system manually, let the system power-on automatically or return to the state where you left off before power failure occurs.

Virus Protection

Most viruses today destroy data stored in hard drives. The system board is designed to protect the boot sector and partition table of your hard disk drive.

1.2 Hyper-Threading Technology Functionality Requirements

Enabling the functionality of Hyper-Threading Technology for your computer system requires **ALL** of the following platforms.

Components:

- CPU - an Intel® Pentium® 4 Processor with HT Technology
- Chipset - an Intel® chipset that supports HT Technology
- BIOS - a BIOS that supports HT Technology and has it enabled
- OS - an operating system that includes optimizations for HT Technology

Please refer to Appendix A for information about enabling the functionality of the Hyper-Threading Technology. For more information on Hyper-Threading Technology, go to: www.intel.com/info/hyperthreading.

1.3 Package Checklist

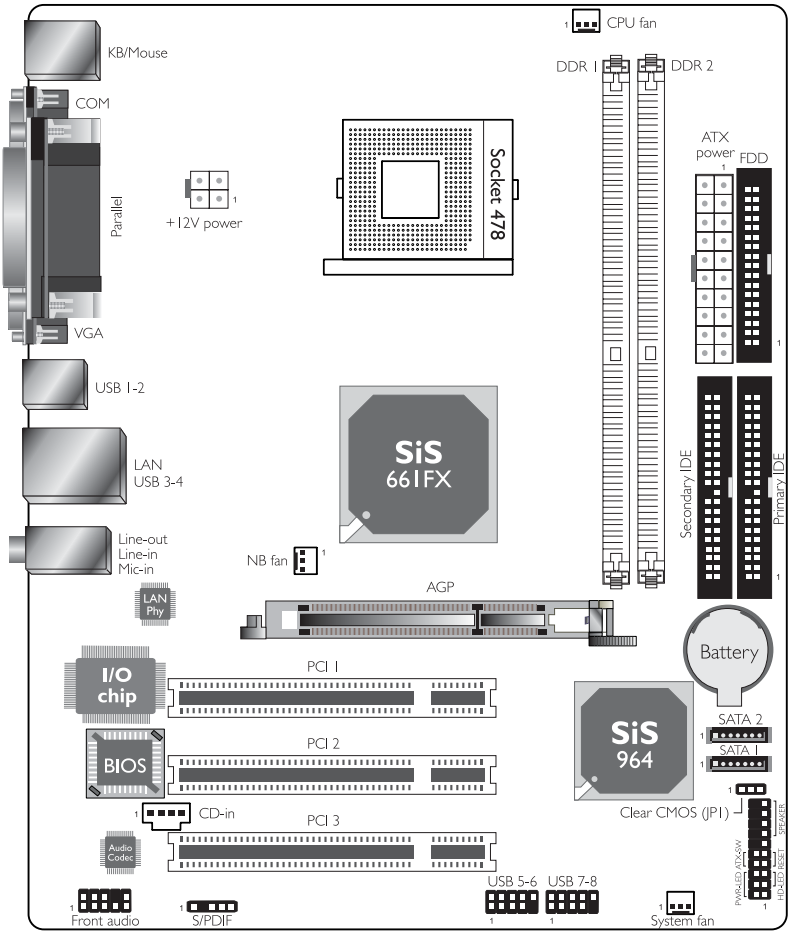
The system board package contains the following items:

- ☑ The system board
- ☑ A user's manual
- ☑ One SATA cable (661FX-MLV only)
- ☑ One IDE cable for ATA/33/66/100/133 IDE drives
- ☑ One 34-pin floppy disk drive cable
- ☑ One SATA RAID floppy diskette (661FX-MLV only)
- ☑ One "Mainboard Utility" CD

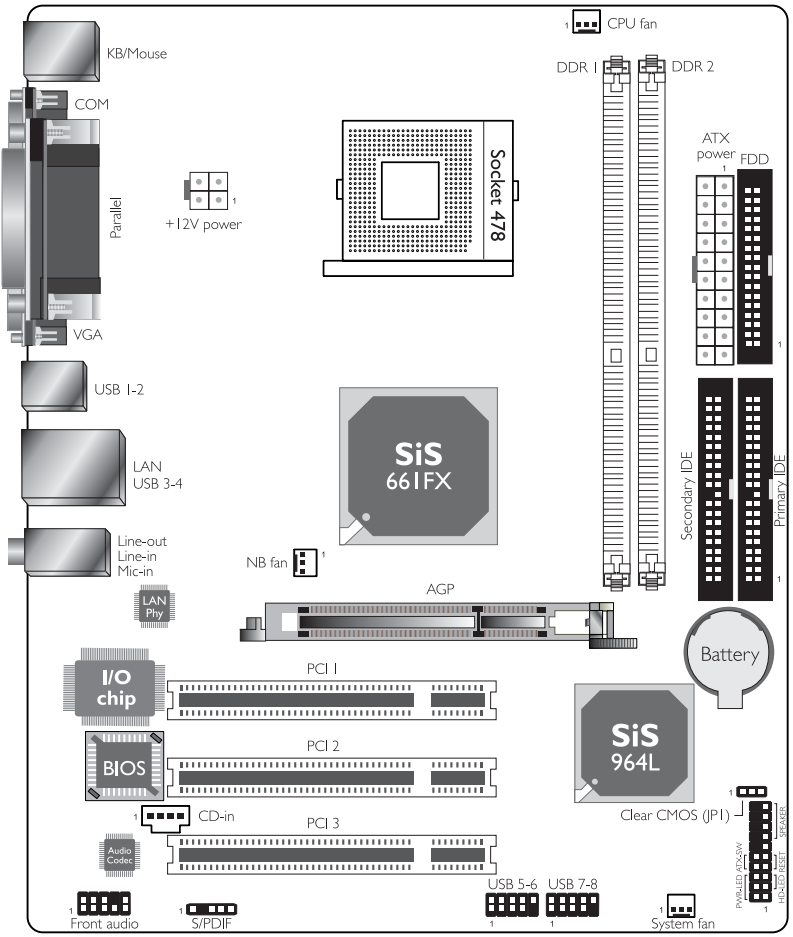
If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

Chapter 2 - Hardware Installation

2.1 System Board Layout



661FX-MLV
(Equipped with SATA connectors)



661FX-MLVE

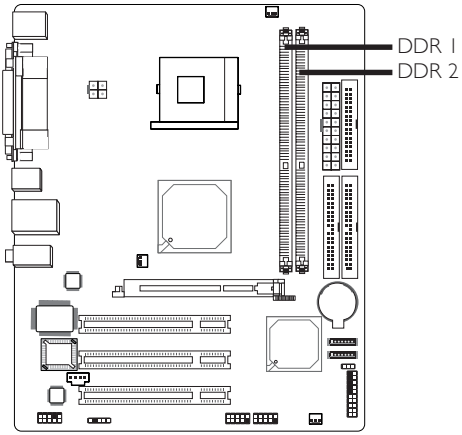
Note:

The illustrations on the following pages are based on the system board with SATA connectors.

Warning:

Electrostatic discharge (ESD) can damage your system board, processor, disk drives, add-in boards, and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

2.2 System Memory

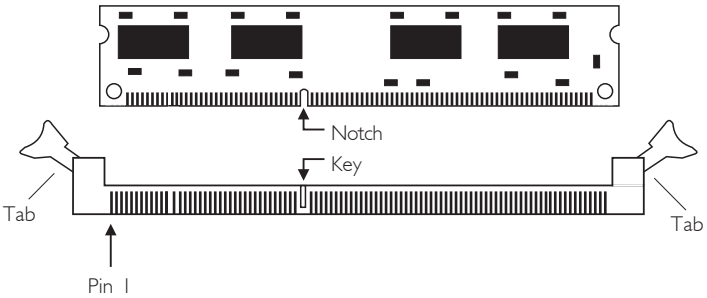


The system board supports DDR SDRAM DIMM. Double Data Rate SDRAM (DDR SDRAM) is a type of SDRAM that doubles the data rate through reading and writing at both the rising and falling edge of each clock. This effectively doubles the speed of operation therefore doubling the speed of data transfer.

Refer to chapter 1 (System Memory section) for detailed specification of the memory supported by the system board.

2.2.1 Installing the DIM Module

A DIM module simply snaps into a DIMM socket on the system board. Pin 1 of the DIM module must correspond with Pin 1 of the socket.



1. Pull the "tabs" which are at the ends of the socket to the side.
2. Position the DIMM above the socket with the "notch" in the module aligned with the "key" on the socket.
3. Seat the module vertically into the socket. Make sure it is completely seated. The tabs will hold the DIMM in place.

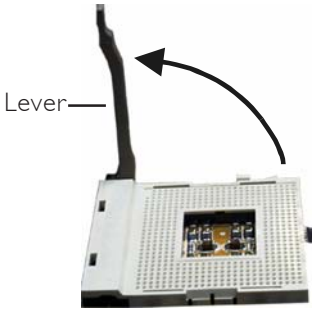
2.3 CPU

2.3.1 Overview

The system board is equipped with a surface mount 478-pin CPU socket. This socket is exclusively designed for installing an Intel processor.

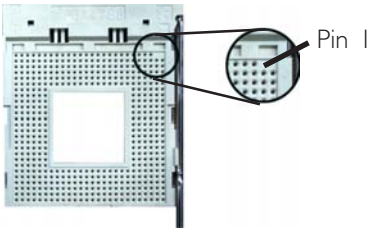
2.3.2 Installing the CPU

1. Locate Socket 478 on the system board.
2. Unlock the socket by pushing the lever sideways, away from the socket, then lifting it up to a 90° angle. Make sure the socket is lifted to at least this angle otherwise the CPU will not fit in properly.



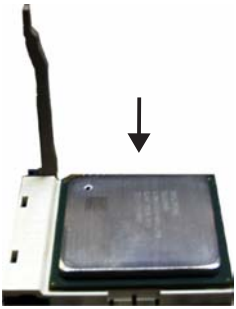
3. Position the CPU above the socket then align the gold mark on the corner of the CPU (designated as pin 1) with pin 1 of the socket.

Important:
Handle the CPU by its edges and avoid touching the pins.



4. Insert the CPU into the socket until it is seated in place. The CPU will fit in only one orientation and can easily be inserted without exerting any force.

Important:
Do not force the CPU into the socket. Forcing the CPU into the socket may bend the pins and damage the CPU.



5. Once the CPU is in place, push down the lever to lock the socket. The lever should click on the side tab to indicate that the CPU is completely secured in the socket.

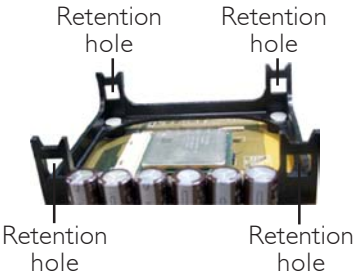
2.3.3 Installing the Fan and Heat Sink

The CPU must be kept cool by using a CPU fan with heatsink. Without sufficient air circulation across the CPU and heat sink, the CPU will overheat damaging both the CPU and system board.

Note:

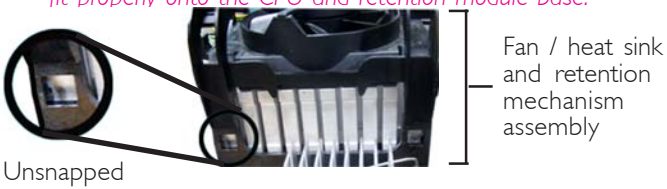
- *Only use Intel® certified fan and heat sink.*
- *An Intel® boxed processor package contains a retention mechanism, heat sink, fan and installation guide. If the installation procedure in the installation guide differs from the one in this section, please follow the installation guide in the package.*
- *If you are installing a non-boxed processor, the heat sink, fan and retention mechanism assembly may look different from the one shown in this section but the procedure will more or less be the same.*

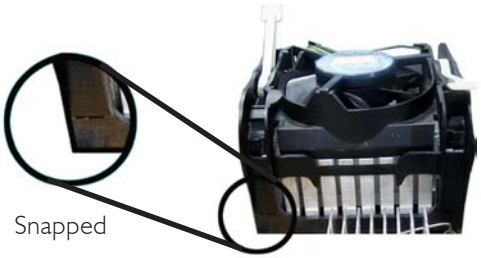
1. The system board comes with the retention module base already installed.



2. Position the fan / heat sink and retention mechanism assembly on the CPU, then align and snap the retention legs' hooks to the retention holes at the 4 corners of the retention module base.

Note:
You will not be able to snap the hooks into the holes if the fan / heat sink and retention mechanism assembly did not fit properly onto the CPU and retention module base.





3. The retention levers at this time remains unlocked as shown in the illustration below.

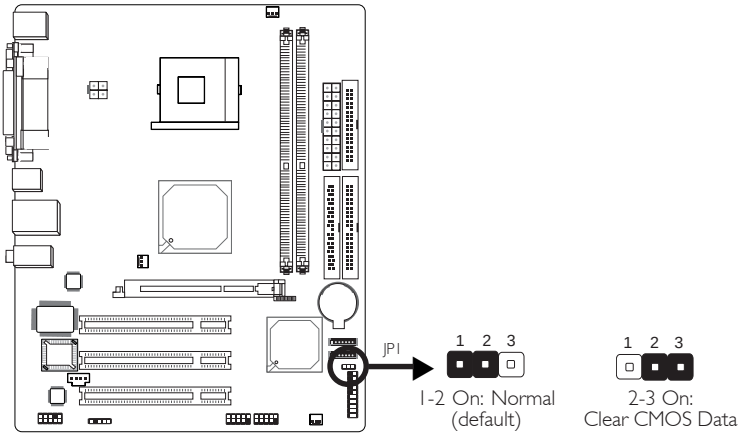
4. Move the retention levers to their opposite directions then push them down. This will secure the fan / heat sink and retention mechanism assembly to the retention module base.

Note:
You will not be able to push the lever down if the direction is incorrect.

5. Connect the CPU fan's cable connector to the CPU fan connector on the system board.

2.4 Jumper Settings

2.4.1 Jumper Settings for Clearing CMOS Data



If you encounter the following,

a) *CMOS data becomes corrupted.*
b) *You forgot the keyboard, supervisor or user password.*
c) *You are unable to boot-up the computer system because the processor's ratio/clock was incorrectly set in the BIOS.*

you can reconfigure the system with the default values stored in the ROM BIOS.

To load the default values stored in the ROM BIOS, please follow the steps below.

1. Power-off the system and unplug the power cord.
2. Set JP1 pins 2 and 3 to On. Wait for a few seconds and set JP1 back to its default setting, pins 1 and 2 On.
3. Now plug the power cord and power-on the system.

   If your reason for clearing the CMOS data is due to incorrect setting of the processor's ratio/clock in the BIOS, please proceed to step 4.

4. After powering-on the system, press <Del> to enter the main menu of the BIOS.

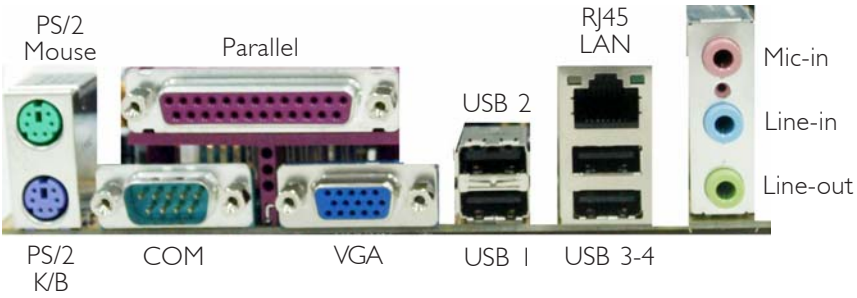
5. Select the Frequency/Voltage Control submenu and press <Enter>.

6. Set the "CPU Clock Ratio" or "CPU Frequency" field to its default setting or an appropriate frequency ratio or bus clock. Refer to the Frequency/Voltage Control section in chapter 3 for more information.

7. Press <Esc> to return to the main menu of the BIOS setup utility. Select "Save & Exit Setup" and press <Enter>.

8. Type <Y> and press <Enter>.

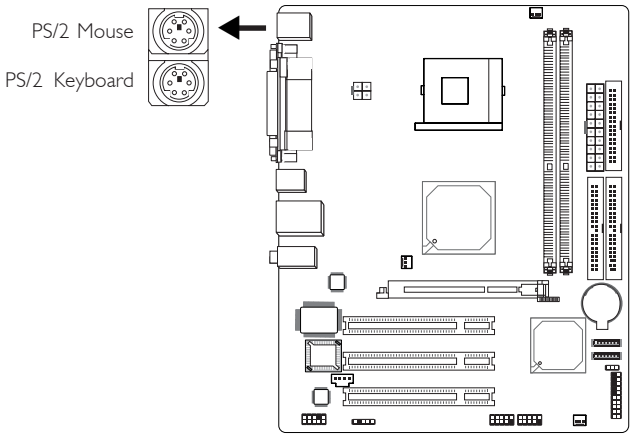
2.5 Rear Panel I/O Ports



The rear panel I/O ports consist of the following:

- PS/2 mouse port
- PS/2 keyboard port
- Parallel port
- COM port
- VGA port
- USB ports
- LAN port
- Mic-in, line-in and line-out jacks

2.5.1 PS/2 Mouse and PS/2 Keyboard Ports



The system board is equipped with an onboard PS/2 mouse (Green) and PS/2 keyboard (Purple) ports - both at location CN1 of the system board. The PS/2 mouse port uses IRQ12. If a mouse is not connected to this port, the system will reserve IRQ12 for other expansion cards.

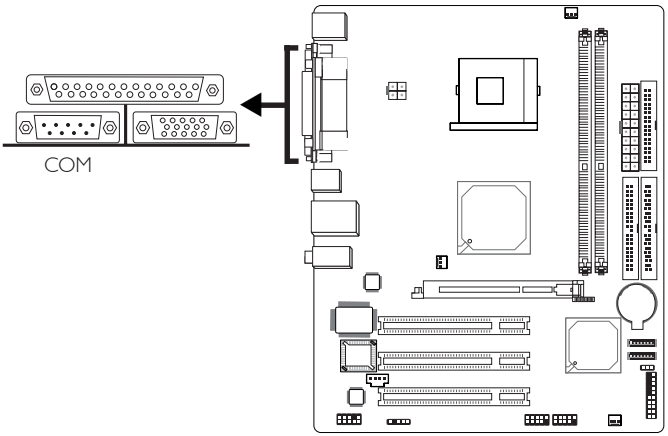
Warning:
Make sure to turn off your computer prior to connecting or disconnecting a mouse or keyboard. Failure to do so may damage the system board.

Wake-On-PS/2 Keyboard/Mouse

The Wake-On-PS/2 Keyboard/Mouse function allows you to use the PS/2 keyboard or PS/2 mouse to power-on the system. To use this function:

- **BIOS Setting:**
  "PS2KB Wakeup From S3/S4/S5" and "PS2MS Wakeup From S3/S4/S5" ("PM Wake Up Events" section) in the Power Management Setup submenu of the BIOS must be set accordingly. Refer to chapter 3 for more information.

2.5.2 Serial Port



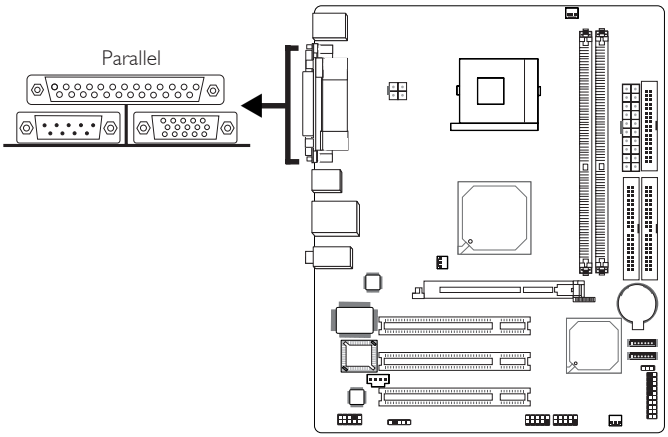
The system board is equipped with one onboard serial port (Teal/Turquoise) at location CN4 of the system board.

The serial port is a RS-232C asynchronous communication port with 16C550A-compatible UARTs that can be used with modems, serial printers, remote display terminals, and other serial devices.

BIOS Setting

Select the serial ports' I/O address in the Integrated Peripherals submenu of the BIOS. Refer to chapter 3 for more information.

2.5.3 Parallel Port



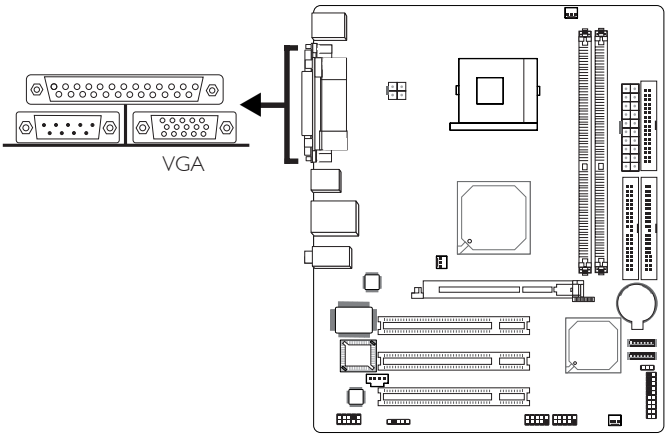
The system board has a standard parallel port (Burgundy) at location CN7 for interfacing your PC to a parallel printer. It supports SPP, ECP and EPP.

Setting	Function
SPP (Standard Parallel Port)	Allows normal speed operation but in one direction only.
ECP (Extended Capabilities Port)	Allows parallel port to operate in bidirectional mode and at a speed faster than the SPP's data transfer rate.
EPP (Enhanced Parallel Port)	Allows bidirectional parallel port operation at maximum speed.

BIOS Setting

Select the parallel port's mode in the Integrated Peripherals submenu of the BIOS. Refer to chapter 3 for more information.

2.5.4 VGA Port



The system board can only be used with an analog video monitor. Connect the monitor's 15-pin D-shell cable connector to the VGA port (Blue) at location CN2. If your monitor supports analog video but does not have a 15-pin D-shell connector, see your monitor dealer for the adapter or optional cable. After you plug the monitor cable into the VGA port, gently tighten the cable screws to hold the connector in place. Some monitors have a switch that chooses between analog and TTL (or digital) operation. If your monitor has such a switch, set it for analog.

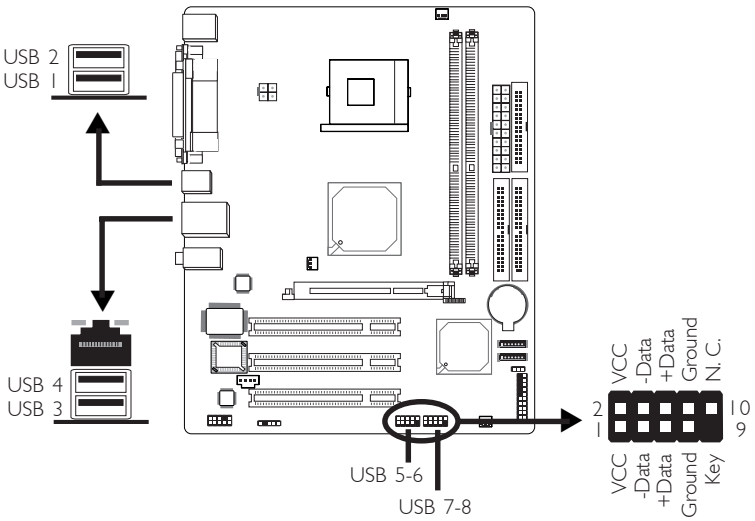
BIOS Setting

Select the VGA's share memory size in the Advanced Chipset Features submenu ("OnChip AGP Control" section) of the BIOS. Refer to chapter 3 for more information.

Driver Installation

Install the "SiS Graphics Drivers" contained in the provided CD into your system. Refer to chapter 4 for more information.

2.5.5 Universal Serial Bus Ports



Four onboard USB 2.0/1.1 ports (Black) are at locations CN5 (USB 1-2) and CN6 (USB 3-4) of the system board.

J6 (USB 5-6) and J7 (USB 7-8) connectors allow you to connect 4 additional USB 2.0/1.1 ports. The additional USB ports may be mounted on a card-edge bracket. Install the card-edge bracket to the system chassis then insert the connector that is attached to the USB port cables to J6 or J7.

BIOS Setting

Configure the onboard USB in the Integrated Peripherals submenu ("SIS OnChip PCI Device" section) of the BIOS. Refer to chapter 3 for more information.

If you are using a USB 2.0 device, you must enable the USB 2.0 function in the same BIOS submenu mentioned above.

Driver Installation

You may need to install the proper drivers in your operating system to use the USB device. Refer to your operating system's manual or documentation for more information.

If you are using a USB 2.0 device, install the "SiS USB 2.0 Drivers". Refer to chapter 4 for more information.

Wake-On-USB Keyboard/Mouse

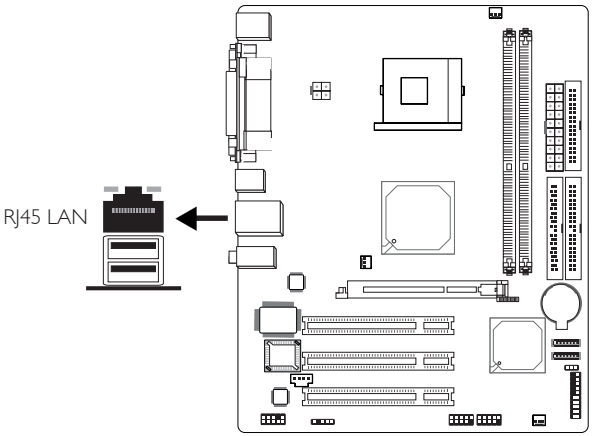
The Wake-On-USB Keyboard/Mouse function allows you to use a USB keyboard or USB mouse to wake up a system from the S3 (STR - Suspend To RAM) state. To use this function:

- **BIOS Setting:**
  "USB Port Wake Up Control" ("PM Wake Up Events" section) in the Power Management Setup submenu of the BIOS must be set to Enabled. Refer to chapter 3 for more information.

Important:

- *If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the 5VSB power source of your power supply must support ≥1.5A.*
- *If you are using the Wake-On-USB Keyboard/Mouse function for 3 or more USB ports, the 5VSB power source of your power supply must support ≥2A.*

2.5.6 RJ45 LAN Port



The system board is equipped with an onboard RJ45 LAN port at location CN6 of the system board. It allows the system board to connect to a local area network by means of a network hub.

BIOS Setting

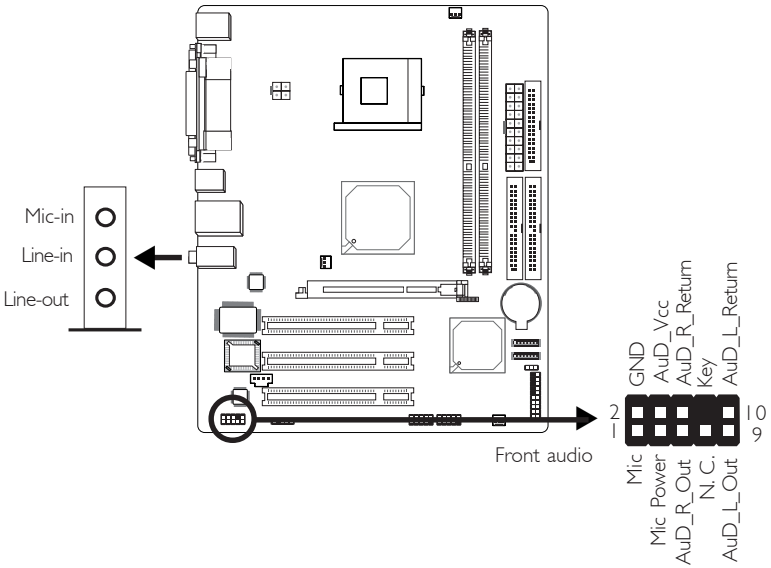
Enable or disable the onboard LAN in the Integrated Peripherals submenu ("SIS OnChip PCI Device" section) of the BIOS. Refer to chapter 3 for more information.

To wake up the system via the LAN port, set the "Resume On LAN" field ("PM Wake Up Events" section) in the Power Management Setup submenu of the BIOS to Enabled.

Driver Installation

Install the "SiS LAN Drivers". Refer to chapter 4 for more information.

2.5.7 Audio



Audio Jacks

The system board is equipped with 3 audio jacks at location CN3. A jack is a one-hole connecting interface for inserting a plug.

- **Mic-in Jack (Pink)**
  This jack is used to connect an external microphone.

- **Line-in Jack (Light Blue)**
  This jack can be connected to the line-out jack of any external audio devices such as Hi-fi set, CD player, AM/FM radio tuner, synthesizer, etc. Connect a stereo cable from the line-out jack of your external device to this line-in jack.

- **Line-out Jack (Lime)**

  This jack is used to connect external speakers for audio output from the system board. Using this jack disables the front audio's line-out function.

Front Audio

The front audio connector (J1) allows you to connect to the line-out and mic-in jacks that are at the front panel of your system. Using this connector will disable the rear audio's line-out and mic-in functions.

Remove the jumper caps from pins 5-6 and pins 9-10 of J1 prior to connecting the front audio cable connector. Make sure pin 1 of the cable connector is aligned with pin 1 of J1. If you are not using this connector, make sure to replace the jumper caps back to their original pin locations.

Pins 5-6 and 9-10 short (default)	The front audio is disabled. The rear audio is enabled.
Pins 5-6 and 9-10 open	The front audio is enabled. The rear audio is disabled.

6-Channel Audio

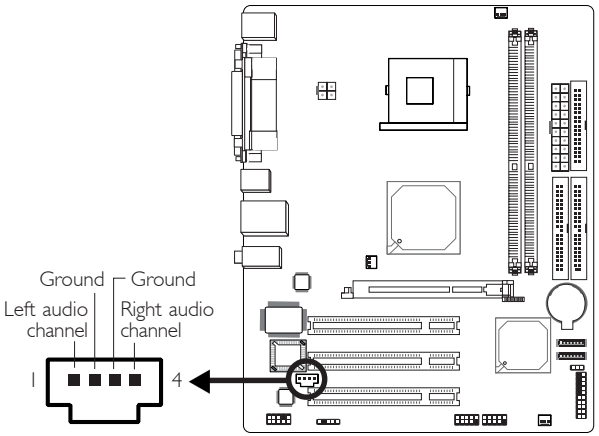
The audio jacks at the rear panel will support 6-channel audio only when the audio utility is configured to support this function. Mic-in at the rear I/O panel will be disabled. Use the front audio's mic-in jack.

Driver Installation

Install the "Realtek Audio Drivers". An audio software application program will at the same time be installed into your system. This program will allow you to configure 2-channel, 4-channel and 6-channel audio modes as well as configure the audio effects. Refer to chapter 4 for more information.

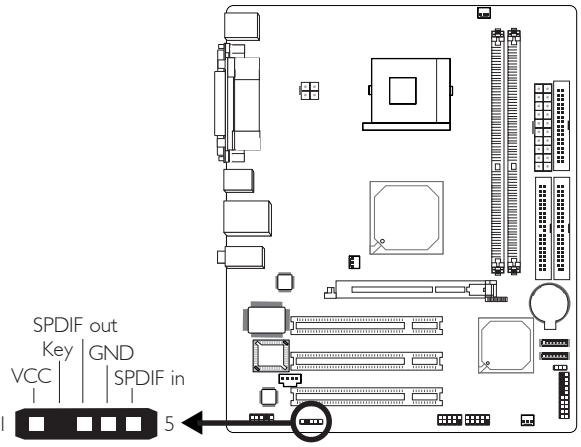
2.6 I/O Connectors

2.6.1 CD-in Internal Audio Connector



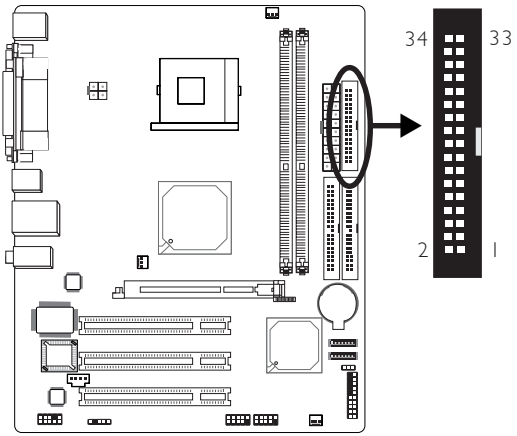
The CD-in (J3) connector is used to receive audio from a CD-ROM drive, TV tuner or MPEG card.

2.6.2 S/PDIF Connector



The system board is equipped with a S/PDIF connector. The S/PDIF port may be mounted on a card-edge bracket. Install the card-edge bracket to the system chassis then connect the audio cable connector to J4. Make sure pin 1 of the audio cable connector is aligned with pin 1 of J4.

2.6.3 Floppy Disk Drive Connector



The system board is equipped with a shrouded floppy disk drive connector for connecting a standard floppy disk drive. To prevent improper floppy cable installation, the shrouded floppy disk header has a keying mechanism. The 34-pin connector on the floppy cable can be placed into the header only if pin 1 of the connector is aligned with pin 1 of the header.

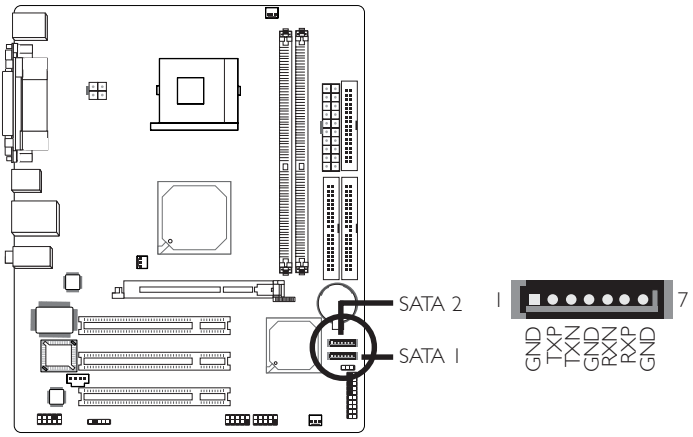
Connecting the Floppy Disk Drive Cable

Install one end of the floppy disk drive cable into the shrouded floppy disk header (J15) on the system board and the other end-most connector to the floppy drive. The colored edge of the daisy chained ribbon cable should be aligned with pin 1 of J15.

BIOS Setting

Enable or disable this function in the Integrated Peripherals submenu of the BIOS. Refer to chapter 3 for more information.

2.6.4 SATA Connectors (661FX-MLV only)



The 661FX-MLV system board is equipped with 2 SATA connectors at locations J11 (SATA 2) and J12 (SATA 1) for connecting SATA devices. Connect one end of the SATA cable to a SATA connector and the other end to your SATA device.

Configure these connectors in the Integrated Peripherals submenu ("SIS OnChip PCI Device" section) of the BIOS. Refer to chapter 3 for more information.

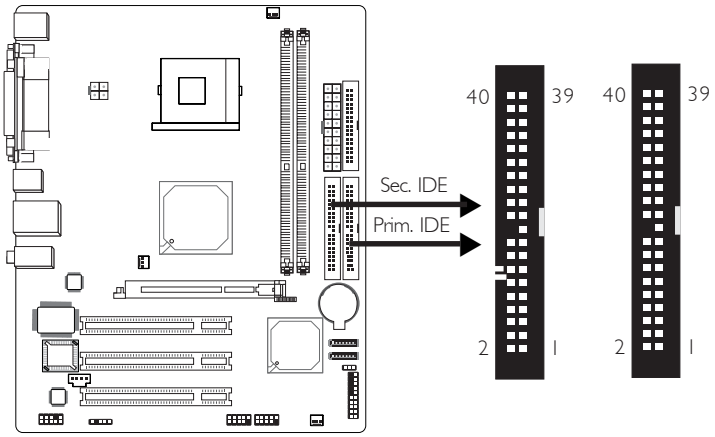
Configuring RAID on SATA Drives

The SiS 964 south bridge controller allows configuring RAID on the SATA drives. It supports RAID 0, RAID 1 and JBOD. The following must be set accordingly.

- **BIOS Setting**
  1. Set the "SiS Serial ATA Controller" field to "Enabled". (Integrated Peripherals submenu - "SIS OnChip PCI Device" section of the Award BIOS.)
  2. Set the "SiS Serial ATA Mode" field to "RAID". (Integrated Peripherals submenu - "SIS OnChip PCI Device" section of the Award BIOS.)
  3. Set the "RAID or SCSI Card Boot" field to "SiS 964 RAID". (Advanced BIOS Features submenu of the Award BIOS.)

4. Configure RAID (e.g. creating or deleting RAID) in the SiS RAID BIOS Setting Utility. You can enter this utility by pressing the <Ctrl> and <S> keys simultaneously during system boot up.
5. Install the "SiS RAID Drivers". The RAID utility will at the same time install into the system. Refer to chapter 4 for more information.

2.6.5 IDE Disk Drive Connector



The system board is equipped with two shrouded PCI IDE headers that will interface four Enhanced IDE (Integrated Drive Electronics) disk drives. To prevent improper IDE cable installation, each shrouded PCI IDE header has a keying mechanism. The 40-pin connector on the IDE cable can be placed into the header only if pin 1 of the connector is aligned with pin 1 of the header.

Each IDE connector supports 2 devices, a Master and a Slave. Use an IDE ribbon cable to connect the drives to the system board. An IDE ribbon cable have 3 connectors on them, one that plugs into an IDE connector on the system board and the other 2 connects to IDE devices. The connector at the end of the cable is for the Master drive and the connector in the middle of the cable is for the Slave drive.

Connecting the IDE Disk Drive Cable

Install one end of the IDE cable into the Primary IDE header (J14) on the system board and the other connectors to the IDE devices.

If you are adding a third or fourth IDE device, use another IDE cable and install one end of the cable into the Secondary IDE header (J10) on the system board and the other connectors to the IDE devices.

Note:
Refer to your disk drive user's manual for information about selecting proper drive switch settings.

Adding a Second IDE Disk Drive

When using two IDE drives, one must be set as the master and the other as the slave. Follow the instructions provided by the drive manufacturer for setting the jumpers and/or switches on the drives.

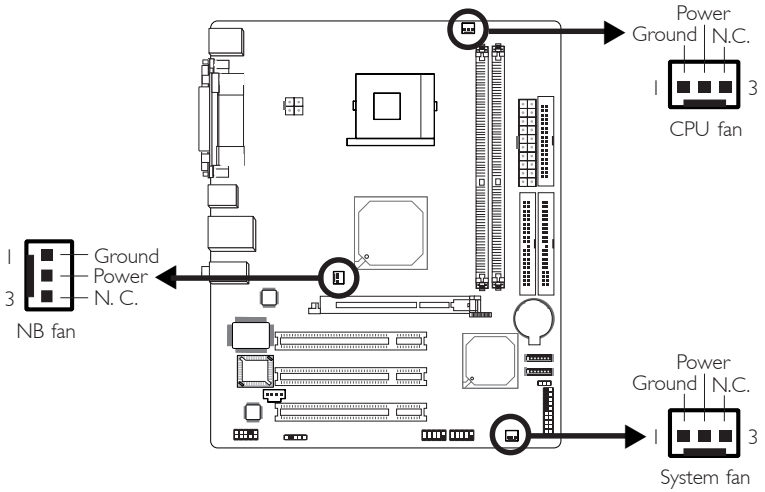
The system board supports Enhanced IDE or ATA-2, ATA/33, ATA/66, ATA/100 or ATA/133 hard drives. We recommend that you use hard drives from the same manufacturer. In a few cases, drives from two different manufacturers will not function properly when used together. The problem lies in the hard drives, not the system board.

Important:
If you encountered problems while using an ATAPI CD-ROM drive that is set in Master mode, please set the CD-ROM drive to Slave mode. Some ATAPI CD-ROMs may not be recognized and cannot be used if incorrectly set in Master mode.

BIOS Setting

Configure the onboard primary or secondary IDE in the Integrated Peripherals submenu ("SIS OnChip IDE Device" field) of the BIOS. Refer to chapter 3 for more information.

2.6.6 Cooling Fan Connectors



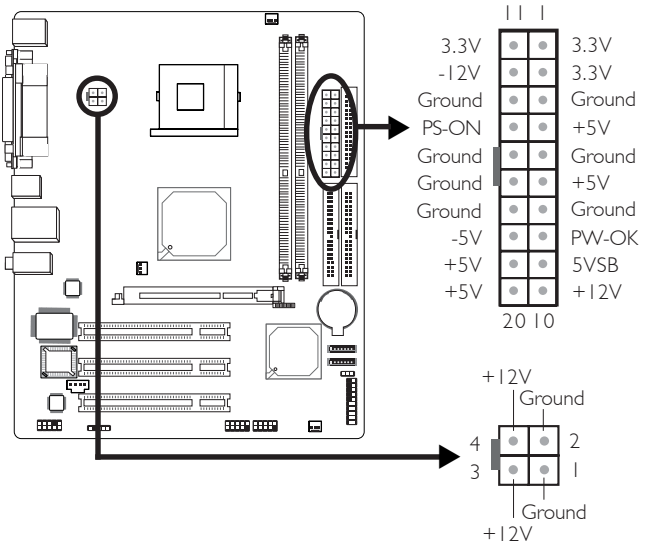
Connect the CPU fan's cable connector to the CPU fan connector (J9) on the system board.

Connect the SiS 661FX fan's cable connector to the NB fan connector (J5) on the system board.

The system fan (J8) connector is used to connect an additional cooling fan.

These cooling fans will provide adequate airflow throughout the chassis to prevent overheating the CPU and system board components.

2.6.7 Power Connectors

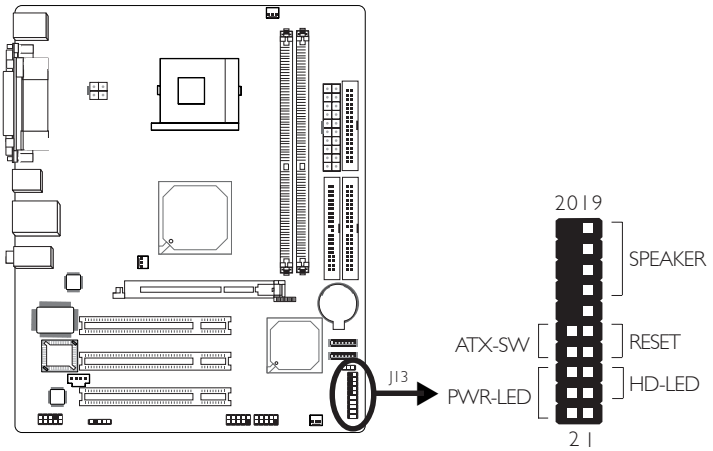


We recommend that you use a power supply that complies with the ATX12V Power Supply Design Guide Version 1.1. An ATX12V power supply has a standard 20-pin ATX main power connector and a 4-pin +12V power connector that must be inserted onto CN9 and CN8 connectors respectively.

The 4-pin +12V power connector enables the delivery of more +12VDC current to the processor's Voltage Regulator Module (VRM).

The system board requires a minimum of 250 Watt power supply to operate. Your system configuration (amount of memory, add-in cards, peripherals, etc.) may exceed the minimum power requirement. To ensure that adequate power is provided, use a 300 Watt (or greater) power supply.

2.6.8 Front Panel Connectors



HD-LED: Primary/Secondary IDE LED

This LED will light when the hard drive is being accessed.

RESET: Reset Switch

This switch allows you to reboot without having to power off the system thus prolonging the life of the power supply or system.

SPEAKER: Speaker Connector

This connects to the speaker installed in the system chassis.

ATX-SW: ATX Power Switch

Depending on the setting in the BIOS setup, this switch is a "dual function power button" that will allow your system to enter the Soft-Off or Suspend mode. Refer to "Soft-Off By PWRBTN" in the Power Management Setup (Chapter 3).

PWR-LED: Power/Standby LED

When the system's power is on, this LED will light. When the system is in the S1 (POS - Power On Suspend) or S3 (STR - Suspend To RAM) state, it will blink every second.

Note:

If a system did not boot-up and the Power/Standby LED did not light after it was powered-on, it may indicate that the CPU or memory module was not installed properly. Please make sure they are properly inserted into their corresponding socket.

	Pin	Pin Assignment
HD-LED (Primary/Secondary IDE LED)	3 5	HDD LED Power HDD
Reserved	14 16	N. C. N. C.
ATX-SW (ATX power switch)	8 10	PWRBT+ PWRBT-
Reserved	18 20	N. C. N. C.
RESET (Reset switch)	7 9	Ground H/W Reset
SPEAKER (Speaker connector)	13 15 17 19	Speaker Data N. C. Ground Speaker Power
PWR-LED (Power/Standby LED)	2 4 6	LED Power (+) LED Power (+) LED Power (-) or Standby Signal

Chapter 3 - BIOS Setup

3.1 Award BIOS Setup Utility

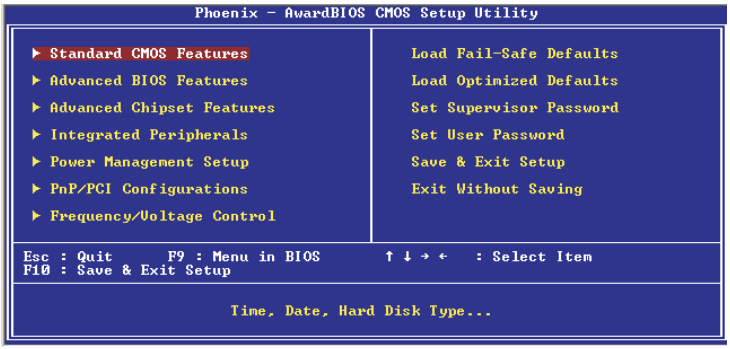
The Basic Input/Output System (BIOS) is a program that takes care of the basic level of communication between the processor and peripherals. In addition, the BIOS also contains codes for various advanced features found in this system board. This chapter explains the Setup Utility for the Award BIOS.

After you power up the system, the BIOS message appears on the screen and the memory count begins. After the memory test, the following message will appear on the screen:

Press DEL to enter setup

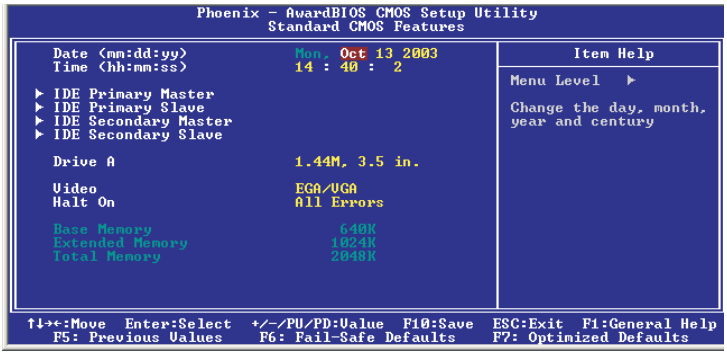
If the message disappears before you respond, restart the system or press the "Reset" button. You may also restart the system by pressing the <Ctrl> <Alt> and <Del> keys simultaneously.

When you press <Del>, the main menu screen will appear.



3.1.1 Standard CMOS Features

Use the arrow keys to highlight "Standard CMOS Features" and press <Enter>. The following screen will appear.


Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features
Date (mm:dd:yy) Mon, Oct 13 2003
Time (hh:mm:ss) 14 : 40 : 2
IDE Primary Master
IDE Primary Slave
IDE Secondary Master
IDE Secondary Slave
Drive A 1.44M, 3.5 in.
Video EGA/VGA
Halt On All Errors
Base Memory 640K
Extended Memory 1024K
Total Memory 2048K
Item Help
Menu Level ▶
Change the day, month, year and century
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

3.1.1.1 Date

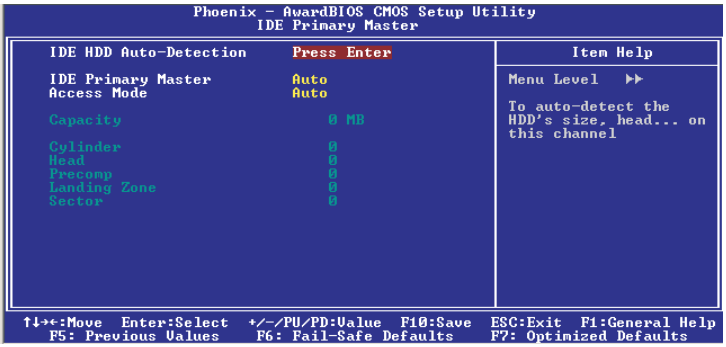
The date format is <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1990 to 2098.

3.1.1.2 Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

3.1.1.3 IDE Primary Master, IDE Primary Slave, IDE Secondary Master and IDE Secondary Slave

Move the cursor to the "IDE Primary Master", "IDE Primary Slave", "IDE Secondary Master" or "IDE Secondary Slave" field, then press <Enter>.



The settings on the screen are for reference only. Your version may not be identical to this one.

IDE HDD Auto Detection

Detects the parameters of the drive. The parameters will automatically be shown on the screen.

IDE Primary Master/Slave and IDE Secondary Master/Slave

The drive type information should be included in the documentation from your hard disk vendor. If you select "Auto", the BIOS will auto-detect the HDD & CD-ROM drive at the POST stage and show the IDE for the HDD & CD-ROM drive. If a hard disk has not been installed, select "None".

Access Mode

For hard drives larger than 528MB, you would typically select the LBA type. Certain operating systems require that you select CHS or Large. Please check your operating system's manual or Help desk on which one to select.

Capacity

Displays the approximate capacity of the disk drive. Usually the size is slightly greater than the size of a formatted disk given by a disk checking program.

Cylinder

This field displays the number of cylinders.

Head

This field displays the number of read/write heads.

Precomp

This field displays the number of cylinders at which to change the write timing.

Landing Zone

This field displays the number of cylinders specified as the landing zone for the read/write heads.

Sector

This field displays the number sectors per track.

3.1.1.4 Drive A

This field is used to select the type of floppy disk drive installed.

None	No floppy drive is installed
360K, 5.25 in.	5-1/4 in. standard drive; 360KB capacity
1.2M, 5.25 in.	5-1/4 in. AT-type high-density drive; 1.2MB capacity
720K, 3.5 in.	3-1/2 in. double-sided drive; 720KB capacity
1.44M, 3.5 in.	3-1/2 in. double-sided drive; 1.44MB capacity
2.88M, 3.5 in.	3-1/2 in. double-sided drive; 2.88MB capacity

3.1.1.5 Video

This field selects the type of video adapter used for the primary system monitor. Although secondary monitors are supported, you do not have to select the type. The default setting is EGA/VGA.

EGA/VGA Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SVGA and PGA monitor adapters.

CGA 40 Color Graphics Adapter. Power up in 40-column mode.

CGA 80 Color Graphics Adapter. Power up in 80-column mode.

Mono Monochrome adapter. Includes high resolution monochrome adapters.

3.1.1.6 Halt On

This field determines whether the system will stop if an error is detected during power up. The default setting is All Errors.

No Errors The system boot will not stop for any errors detected.

All Errors The system boot will stop whenever the BIOS detects a non-fatal error.

All, But Keyboard The system boot will not stop for a keyboard error; it will stop for all other errors.

All, But Diskette The system boot will not stop for a disk error; it will stop for all other errors.

All, But Disk/Key The system boot will not stop for a disk or keyboard error; it will stop for all other errors.

3.1.1.7 Base Memory

Displays the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the motherboard or 640K for systems with 640K or more memory installed on the motherboard.

3.1.1.8 Extended Memory

Displays the amount of extended memory detected during boot-up.

3.1.1.9 Total Memory

Displays the total memory available in the system.

3.1.2 Advanced BIOS Features

The Advanced BIOS Features allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features
CPU Feature Press Enter
Virus Warning Disabled
CPU L1 & L2 Cache Enabled
Hyper-Threading Technology Enabled
CPU L2 Cache ECC Checking Enabled
Quick Power On Self Test Enabled
RAID or SCSI Card Boot SiS 964 Raid
First Boot Device Floppy
Second Boot Device HDD-0
Third Boot Device LS120
Boot Other Device Enabled
Boot Up Floppy Seek Disabled
Boot Up NumLock Status On
Gate A20 Option Fast
Typematic Rate Setting Disabled
Typematic Rate (Chars/Sec) 6
Typematic Delay (Msec) 250
Security Option Setup
APIC Mode Enabled
MPS Version Control For OS 1.4
OS Select For DRAM > 64MB Non-OS2
HDD S.M.A.R.T. Capability Disabled
Report No FDD For WIN 95 No
Full Screen LOGO Show Disabled
Small Logo(EPA) Show Enabled
Item Help
Menu Level
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The screen above list all the fields available in the Advanced BIOS Features submenu, for ease of reference in this manual. In the actual CMOS setup, you have to use the scroll bar to view the fields. The settings on the screen are for reference only. Your version may not be identical to this one.

3.1.2.1 CPU Feature

This field is used to configure the CPU that is installed on the system board. Move the cursor to this field then press <Enter>.

3.1.2.2 Virus Warning

This field protects the boot sector and partition table of your hard disk drive. When this field is enabled, the Award BIOS will monitor the boot sector and partition table of the hard disk drive. If an attempt is made to write to the boot sector or partition table of the hard disk drive, the BIOS will halt the system and an error message will appear.

After seeing the error message, if necessary, you will be able to run an anti-virus program to locate and remove the problem before any damage is done.

Many disk diagnostic programs which attempt to access the boot sector table will cause the warning message to appear. If you are running such a program, we recommend that you first disable this field. Also, disable this field if you are installing or running certain operating systems like Windows® 98/2000/ME/XP or the operating system may not install nor work.

3.1.2.3 CPU L1 & L2 Cache

These fields speed up the memory access. The default value is enabled. Enable the external cache for better performance.

3.1.2.4 Hyper-Threading Technology (for Intel® Pentium® 4 Processor with Hyper-Threading Technology only)

This field is used to enable the functionality of the Intel® Pentium® 4 Processor with Hyper-Threading Technology and will appear only when using this processor.

3.1.2.5 CPU L2 Cache ECC Checking

The processors supported by the system board come with built-in Level 2 cache. By default, ECC is enabled to check the Level 2 cache. If you are not using this function, set this field to Disabled.

3.1.2.6 Quick Power On Self Test

This field speeds up Power On Self Test (POST) whenever the system is powered on. The BIOS will shorten or skip some check items during POST. To attain the shortest POST time, select "Fast".

3.1.2.7 RAID or SCSI Card Boot

If there are drives connected to both the SATA connector and PCI SCSI add-in card, you can select the drive you want to boot.

SiS 964 RAID	The drive is connected to the SATA connector that is on the system board.
PCI SCSI Card	The drive is connected to the PCI SCSI add-in card that is installed in a PCI slot.

3.1.2.8 First Boot Device, Second Boot Device, Third Boot Device and Boot Other Device

Select the drive to boot first, second and third in the "First Boot Device" "Second Boot Device" and "Third Boot Device" fields respectively. The BIOS will boot the operating system according to the sequence of the drive selected. Set "Boot Other Device" to Enabled if you wish to boot from another device.

3.1.2.9 Boot Up Floppy Seek

When enabled, the BIOS will check whether the floppy disk drive installed is 40 or 80 tracks. Note that the BIOS cannot distinguish between 720K, 1.2M, 1.44M and 2.88M drive types as they are all 80 tracks. When disabled, the BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360KB.

3.1.2.10 Boot Up NumLock Status

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

3.1.2.11 Gate A20 Option

This entry allows you to select how gate A20 is handled. Gate A20 is a device used to address memory above 1 Mbyte. Initially, gate A20 was handled via the keyboard controller. Today, while keyboards still provide this support, it is more common, and much faster, for the system chipset to provide support for gate A20.

3.1.2.12 Typematic Rate Setting

Disabled Continually holding down a key on your keyboard will cause the BIOS to report that the key is down.

Enabled The BIOS will not only report that the key is down, but will first wait for a moment, and, if the key is still down, it will begin to report that the key has been depressed repeatedly. For example, you would use such a feature to accelerate cursor movements with

the arrow keys. You can then select the typematic rate and typematic delay in the "Typematic Rate (Chars/Sec)" and "Typematic Delay (Msec)" fields below.

3.1.2.13 Typematic Rate (Chars/Sec)

This field allows you to select the rate at which the keys are accelerated.

3.1.2.14 Typematic Delay (Msec)

This field allows you to select the delay between when the key was first depressed and when the acceleration begins.

3.1.2.15 Security Option

This field determines when the system will prompt for the password - everytime the system boots or only when you enter the BIOS setup. Set the password in the Set Supervisor/User Password submenu.

System The system will not boot and access to Setup will be denied unless the correct password is entered at the prompt.

Setup The system will boot, but access to Setup will be denied unless the correct password is entered at the prompt.

3.1.2.16 APIC Mode

Leave this field in its default setting.

3.1.2.17 MPS Version Control for OS

This field is used to select the MPS version that the system board is using.

3.1.2.18 OS Select for DRAM > 64MB

This field allows you to access the memory that is over 64MB in OS/2.

3.1.2.19 HDD S.M.A.R.T. Capability

The system board supports SMART (Self-Monitoring, Analysis and Reporting Technology) hard drives. SMART is a reliability prediction technology for ATA/IDE and SCSI drives. The drive will provide sufficient notice to the system or user to backup data prior to the drive's failure. The default is Disabled. If you are using hard drives that support S.M.A.R.T., set this field to Enabled. SMART is supported in ATA/33 or later hard drives.

3.1.2.20 Report No FDD For WIN 95

The options are Yes and No.

3.1.2.21 Full Screen Logo Show

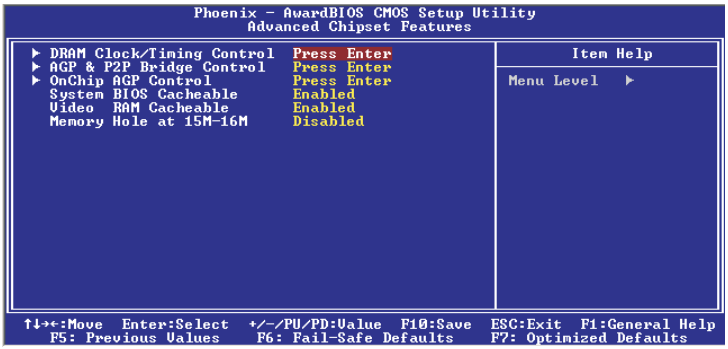
This field is applicable only if you want a particular logo to appear during system boot-up.

Enabled The logo will appear in full screen during system boot-up.
Disabled The logo will not appear during system boot-up.

3.1.2.22 Small Logo(EPA) Show

Enabled The EPA logo will appear during system boot-up.
Disabled The EPA logo will not appear during system boot-up.

3.1.3 Advanced Chipset Features

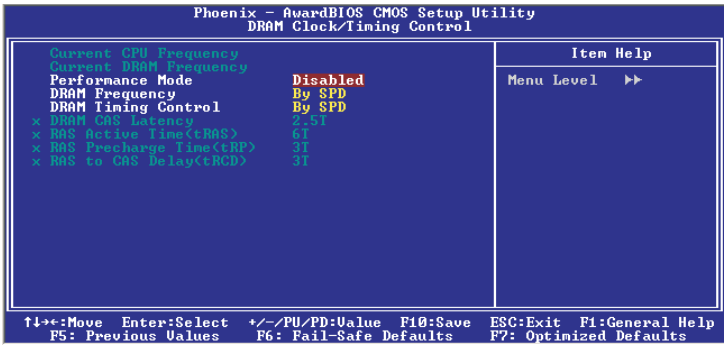

Phoenix – AwardBIOS CMOS Setup Utility
Advanced Chipset Features
DRAM Clock/Timing Control Press Enter
AGP & P2P Bridge Control Press Enter
OnChip AGP Control Press Enter
System BIOS Cacheable Enabled
Video RAM Cacheable Enabled
Memory Hole at 15M-16M Disabled
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

This section gives you functions to configure the system based on the specific features of the chipset. The chipset manages bus speeds and access to system memory resources. **These items should not be altered unless necessary.** The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered some incompatibility or that data was being lost while using your system.

3.1.3.1 DRAM Clock/Timing Control

Move the cursor to this field and press <Enter>. The following screen will appear.


Phoenix – AwardBIOS CMOS Setup Utility
DRAM Clock/Timing Control
Current CPU Frequency
Current DRAM Frequency
Performance Mode Disabled
DRAM Frequency By SPD
DRAM Timing Control By SPD
x DRAM CAS Latency 2.5T
x RAS Active Time(tRAS) 6T
x RAS Precharge Time(tRP) 3T
x RAS to CAS Delay(tRCD) 3T
Item Help
Menu Level ▸▸
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

Current CPU Frequency

This field will show the detected frequency of the CPU.

Current DRAM Frequency

This field will show the detected frequency of the DDR SDRAM DIMM.

Performance Mode

For better system performance, set this field to Enabled.

DRAM Frequency

This field is used to select the clock speed of the DDR SDRAM DIMM.

By SPD The EEPROM on a DIMM has SPD (Serial Presence Detect) data structure that stores information about the module such as the memory type, memory size, memory speed, etc. When this option is selected, the system will run according to the information in the EEPROM. This option is the default setting because it provides the most stable condition for the system.

100 MHz The memory clock speed will run at 200MHz.

133 MHz The memory clock speed will run at 266MHz.

166 MHz The memory clock speed will run at 332MHz.

200 MHz The memory clock speed will run at 400MHz DDR.

DRAM Timing Control

This field is used to select the timing of the DRAM.

By SPD The EEPROM on a DIMM has SPD (Serial Presence Detect) data structure that stores information about the module such as the memory type, memory size, memory speed, etc. When this option is selected, the system will run according to the information in the EEPROM. This option is the default setting because it provides the most stable condition for the system. The "DRAM CAS Latency" to "RAS to CAS Delay (tRCD)" fields will show the default settings by SPD.

Manual If you want your system to run at a performance better than the one "by SPD", select "Manual" then select the best option in the "DRAM CAS Latency" to "RAS to CAS Delay (tRCD)" fields.

DRAM CAS Latency

This field is used to select the clock cycle of the SDRAM CAS latency time. The option selected specifies the time before SDRAM starts a read command after receiving it.

RAS Active Time (tRAS)

This field controls RAS# active to Protegra, and refresh to RAS# active delay (in local memory clocks).

RAS Precharge Time (tRP)

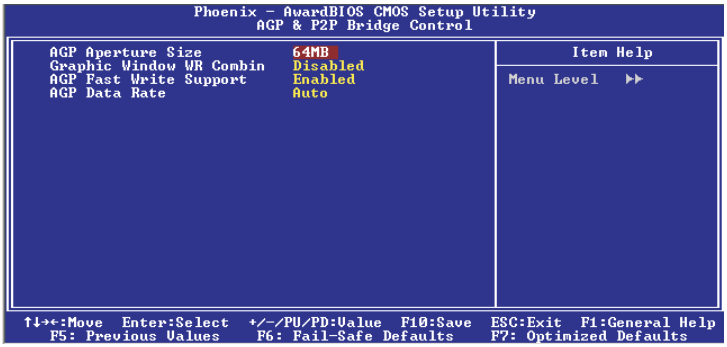
This field controls RAS# precharge (in local memory clocks).

RAS to CAS Delay (tRCD)

Leave this field in its default setting.

3.1.3.2 AGP & P2P Bridge Control

Move the cursor to this field and press <Enter>. The following screen will appear.


Phoenix - AwardBIOS CMOS Setup Utility
AGP & P2P Bridge Control
AGP Aperture Size 64MB
Graphic Window WR Combin Disabled
AGP Fast Write Support Enabled
AGP Data Rate Auto
Item Help
Menu Level ▸▸
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

AGP Aperture Size

This field is relevant to the memory-mapped graphics data of the AGP card installed in your system. Leave this in its default setting.

Graphic Window WR Combin

This field is used to enable the register that defines the starting address of the graphic windows for Graphic Unit Interface (GUI).

AGP Fast Write Support

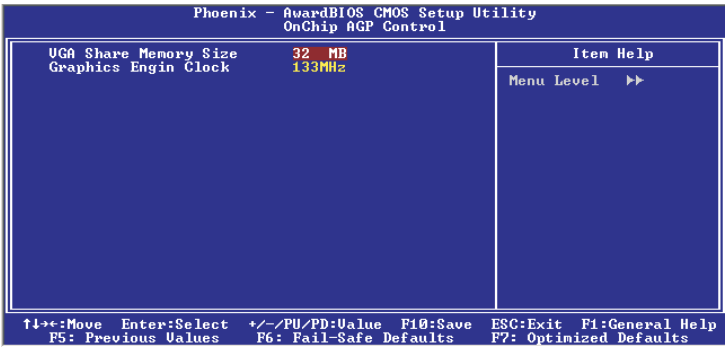
When the AGP Fast Write function is enabled, it will improve the system's performance.

AGP Data Rate

This field is used to select the AGP mode of the AGP card installed on the system board.

3.1.3.3 OnChip AGP Control

Move the cursor to this field and press <Enter>. The following screen will appear.


Phoenix - AwardBIOS CMOS Setup Utility
OnChip AGP Control
VGA Share Memory Size 32 MB
Graphics Engin Clock 133MHz
Item Help
Menu Level ▸▸
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

VGA Share Memory Size

This field is used to select the memory size that will be shared by the VGA.

Graphics Engine Clock

This field is used to select the VGA clock..

3.1.3.4 System BIOS Cacheable

When this field is enabled, accesses to the system BIOS ROM addressed at F0000H-FFFFFH are cached, provided that the cache controller is enabled. The larger the range of the Cache RAM, the higher the efficiency of the system.

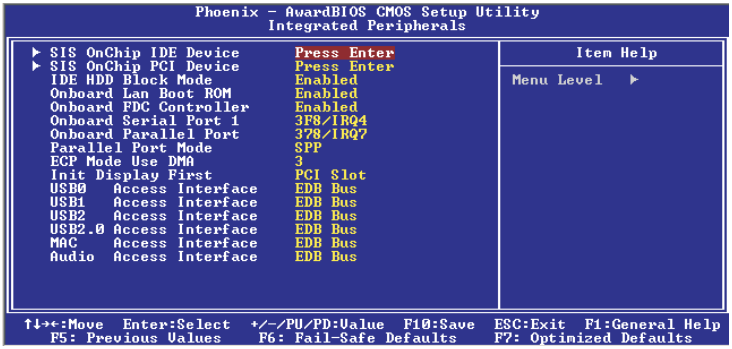
3.1.3.5 Video RAM Cacheable

When enabled, it allows the video RAM to be cacheable thus providing better video performance. If your graphics card does not support this function, set this field to Disabled.

3.1.3.6 Memory Hole At 15M-16M

In order to improve system performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16MB. When enabled, the CPU assumes the 15-16MB memory range is allocated to the hidden ISA address range instead of the actual system DRAM. When disabled, the CPU assumes the 15-16MB address range actually contains DRAM memory. If more than 16MB of system memory is installed, this field must be disabled to provide contiguous system memory.

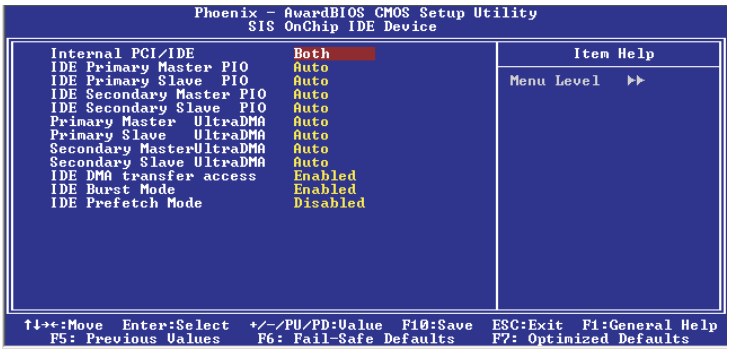
3.1.4 Integrated Peripherals


Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals
SIS OnChip IDE Device Press Enter
SIS OnChip PCI Device Press Enter
IDE HDD Block Mode Enabled
Onboard Lan Boot ROM Enabled
Onboard FDC Controller Enabled
Onboard Serial Port 1 3F8/IRQ4
Onboard Parallel Port 378/IRQ7
Parallel Port Mode SPP
ECP Mode Use DMA 3
Init Display First PCI Slot
USB0 Access Interface EDB Bus
USB1 Access Interface EDB Bus
USB2 Access Interface EDB Bus
USB2.0 Access Interface EDB Bus
MAC Access Interface EDB Bus
Audio Access Interface EDB Bus
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

3.1.4.1 SIS OnChip IDE Device

Move the cursor to this field and press <Enter>. The following screen will appear.


Phoenix - AwardBIOS CMOS Setup Utility
SIS OnChip IDE Device
Internal PCI/IDE Both
IDE Primary Master PIO Auto
IDE Primary Slave PIO Auto
IDE Secondary Master PIO Auto
IDE Secondary Slave PIO Auto
Primary Master UltraDMA Auto
Primary Slave UltraDMA Auto
Secondary MasterUltraDMA Auto
Secondary Slave UltraDMA Auto
IDE DMA transfer access Enabled
IDE Burst Mode Enabled
IDE Prefetch Mode Disabled
Item Help
Menu Level ▶▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

Internal PCI/IDE

This field allows you to enable or disable the primary and secondary IDE controller.

Both	Allows you to configure the IDE Primary Master/Slave PIO, IDE Secondary Master/Slave PIO, Primary Master/Slave UltraDMA and Secondary Master/Slave UltraDMA fields.
Disabled	Select this option if you want to use a different hard drive controller.
Primary	Allows you to configure the IDE Primary Master/Slave PIO and Primary Master/Slave UltraDMA fields.
Secondary	Allows you to configure the IDE Secondary Master/Slave PIO and Secondary Master/Slave UltraDMA fields.

IDE Primary Master/Slave PIO and IDE Secondary Master/Slave PIO

PIO means Programmed Input/Output. Rather than have the BIOS issue a series of commands to effect a transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by themselves. Your system supports five modes, 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode after checking your drive.

Auto	The BIOS will automatically set the system according to your hard disk drive's timing.
Mode 0-4	You can select a mode that matches your hard disk drive's timing. Caution: Do not use the wrong setting or you will have drive errors.

Primary Master/Slave UltraDMA and Secondary Master/Slave UltraDMA

These fields allow you to set the Ultra DMA in use. When Auto is selected, the BIOS will select the best available option after checking your hard drive or CD-ROM.

Auto	The BIOS will automatically detect the settings for you.
Disabled	The BIOS will not detect these categories.

IDE DMA Transfer Access

This field, when Enabled, will enhance the IDE DMA transfer of a parallel ATA IDE hard disk drive. To enable this function, make sure the "Internal PCI/IDE" field is not disabled.

IDE Burst Mode

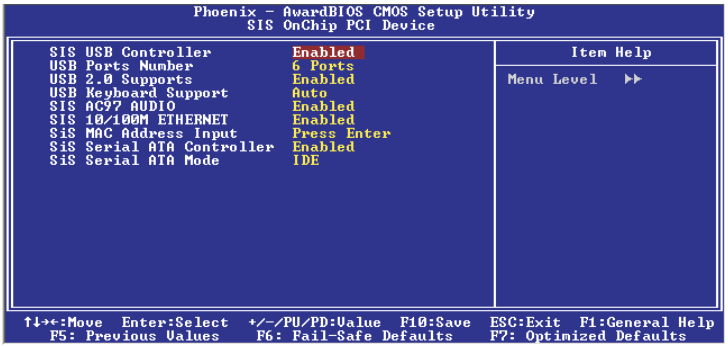
When the IDE Burst Mode function is enabled, it will reduce the latency time between each drive's read and write cycle. To enable this function, make sure the "Internal PCI/IDE" field is not disabled.

IDE Prefetch Mode

This allows data and addresses to be stored in the internal buffer of the chip, thus reducing access time. Enable this field to achieve better performance.

3.1.4.2 SIS OnChip PCI Device

Move the cursor to this field and press <Enter>. The following screen will appear.


Phoenix - AwardBIOS CMOS Setup Utility
SIS OnChip PCI Device
SIS USB Controller Enabled
USB Ports Number 6 Ports
USB 2.0 Supports Enabled
USB Keyboard Support Auto
SIS AC97 AUDIO Enabled
SIS 10/100M ETHERNET Enabled
SiS MAC Address Input Press Enter
SiS Serial ATA Controller Enabled
SiS Serial ATA Mode IDE
Item Help
Menu Level ▸▸
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

SIS USB Controller

Enabled Enables the onboard USB.
Disabled Disables the onboard USB.

USB Ports Number

This field is used to select the number of USB ports you want enabled.

USB 2.0 Support

If you are using a USB 2.0 device, this field must be set to Enabled.

USB Keyboard Support

By default, this field is Disabled. However, if you are using a USB keyboard under DOS, make sure to enable this function.

SIS AC97 Audio

Auto Select this option when using the onboard AC97 codec.
Disabled Select this option when using a PCI sound card.

SIS 10/100M Ethernet

This field is used to enable or disable the onboard LAN.

SIS MAC Address Input

Move the cursor to this field and press <Enter>, then enter the MAC address. This field is configurable only if the "SIS 10/100M Ethernet" field is set to Enabled.

SIS Serial ATA Controller (661FX-MLV only)

This field is used to enable or disable the onboard SATA.

SIS Serial ATA Mode (661FX-MLV only)

IDE Sets the SATA devices as ordinary IDE devices.
RAID Sets the SATA devices for RAID. Configure RAID in the SIS RAID BIOS Setting Utility.

3.1.4.3 IDE HDD Block Mode

Enabled The IDE HDD uses the block mode. The system BIOS will check the hard disk drive for the maximum block size the system can transfer. The block size will depend on the type of hard disk drive.
Disabled The IDE HDD uses the standard mode.

3.1.4.4 Onboard LAN Boot ROM

Enable this field if you wish to use the boot ROM (instead of a disk drive) to boot-up the system and access the local area network directly.

If you wish to change the boot ROM's settings, type the <Shift> and <F10> keys simultaneously when prompted during boot-up. Take note: you will be able to access the boot ROM's program (by typing <Shift> + <F10>) only when this field is enabled.

3.1.4.5 Onboard FDC Controller

Enabled Enables the onboard floppy disk controller.
Disabled Disables the onboard floppy disk controller.

3.1.4.6 Onboard Serial Port 1

Auto The system will automatically select an I/O address for the onboard serial port.

3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3 Allows you to manually select an I/O address for the onboard serial port.

Disabled Disables the onboard serial port.

3.1.4.7 Onboard Parallel Port

378/IRQ7, 3BC/IRQ7, 278/IRQ5 Selects the I/O address and IRQ for the onboard parallel port.

Disabled Disables the onboard parallel port.

3.1.4.8 Parallel Port Mode

The options are SPP, EPP, ECP and ECP+EPP. These apply to a standard specification and will depend on the type and speed of your device. Refer to your peripheral's manual for the best option.

SPP
Allows normal speed operation but in one direction only.

"ECP (Extended Capabilities Port)"
Allows parallel port to operate in bidirectional mode and at a speed faster than the normal mode's data transfer rate.

"EPP (Enhanced Parallel Port)"
Allows bidirectional parallel port operation at maximum speed.

3.1.4.9 ECP Mode Use DMA

This is used to select a DMA channel of the parallel port.

3.1.4.10 Init Display First

This field is used to select whether to initialize the AGP or PCI first when the system boots.

AGP	When the system boots, it will first initialize the AGP.
PCI Slot	When the system boots, it will first initialize PCI.

3.1.4.11 USB0 Access Interface, USB1 Access Interface and USB2 Access Interface

These fields are used to select the access interface of the USB devices. The options are EBD Bus and PCI Bus.

3.1.4.12 USB2.0 Access Interface

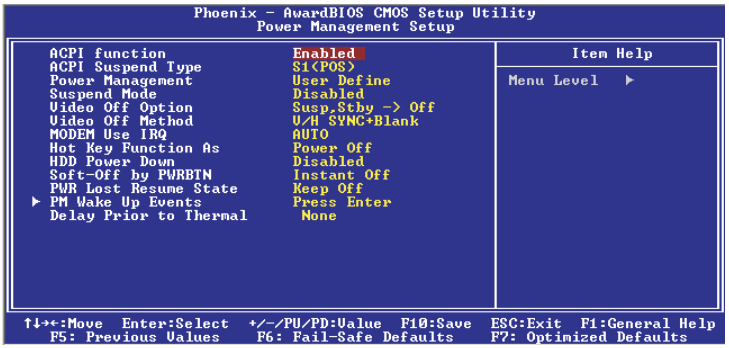
This field is used to select the access interface of the USB 2.0 device. The options are EBD Bus and PCI Bus.

3.1.4.13 MAC Access Interface and Audio Access Interface

These fields are used to select the access interface of the MAC and audio device. The options are EBD Bus and PCI Bus.

3.1.5 Power Management Setup

The Power Management Setup allows you to configure your system to most effectively save energy.


Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup
ACPI function Enabled
ACPI Suspend Type S1(POS)
Power Management User Define
Suspend Mode Disabled
Video Off Option Susp,Stby -> Off
Video Off Method V/H SYNC+Blank
MODEM Use IRQ AUTO
Hot Key Function As Power Off
HDD Power Down Disabled
Soft-Off by PWRBTN Instant Off
PWR Lost Resume State Keep Off
PM Wake Up Events Press Enter
Delay Prior to Thermal None
Item Help
Menu Level
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

3.1.5.1 ACPI Function

This function should be enabled only in operating systems that support ACPI. Currently, only Windows® 98/2000/ME/XP supports this function. If you want to use the Suspend to RAM function, make sure this field is enabled then select "S3(STR)" in the "ACPI Suspend Type" field.

3.1.5.2 ACPI Suspend Type

This field is used to select the type of Suspend mode.

S1(POS) Enables the Power On Suspend function.

S3(STR) Enables the Suspend to RAM function. If you are using the Windows® 98 operating system, refer to "Using the Suspend to RAM Function" in appendix B for more information.

3.1.5.3 Power Management

This field allows you to select the type (or degree) of power saving by changing the length of idle time that elapses before the Suspend mode field is activated.

Min Saving	Minimum power saving time for the Suspend mode = 1 Hour
Max Saving	Maximum power saving time for the Suspend mode = 1 Min.
User Define	Allows you to set the power saving time in the "Suspend Mode" field.

3.1.5.4 Suspend Mode

This is selectable only when the Power Management field is set to User Define. When the system enters the Suspend mode according to the power saving time selected, the CPU and onboard peripherals will be shut off.

3.1.5.5 Video Off Option

Always On	The system BIOS will never turn off the screen.
Suspend -> Off	The screen is off when the system is in the Suspend mode.
All Modes -> Off	The screen is off when the system is in the Doze, Standby or Suspend mode.

3.1.5.6 Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC + Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Initializes display power management signaling. Use this option if your video board supports it.

3.1.5.7 MODEM Use IRQ

This field is used to set an IRQ channel for the modem installed in your system.

3.1.5.8 Hot Key Function As

This field allows you to use the <Ctrl>, <Alt> and <Backspace> keys to enter the Power Off or Suspend mode.

Power Off Press the <Ctrl>, <Alt> and <Backspace> keys simultaneously to enter the power off mode.

Suspend Press the <Ctrl>, <Alt> and <Backspace> keys simultaneously to enter the Suspend mode.

Disable Disables the hot key function.

3.1.5.9 HDD Power Down

This is selectable only when the Power Management field is set to User Define. When the system enters the HDD Power Down mode according to the power saving time selected, the hard disk drive will be powered down while all other devices remain active.

3.1.5.10 Soft-Off by PWRBTN

This field allows you to select the method of powering off your system.

Delay 4 Sec. Regardless of whether the Power Management function is enabled or disabled, if the power button is pushed and released in less than 4 sec, the system enters the Suspend mode. The purpose of this function is to prevent the system from powering off in case you accidentally "hit" or pushed the power button. Push and release again in less than 4 sec to restore. Pushing the power button for more than 4 seconds will power off the system.

Instant-Off Pressing and then releasing the power button at once will immediately power off your system.

3.1.5.11 PWR Lost Resume State

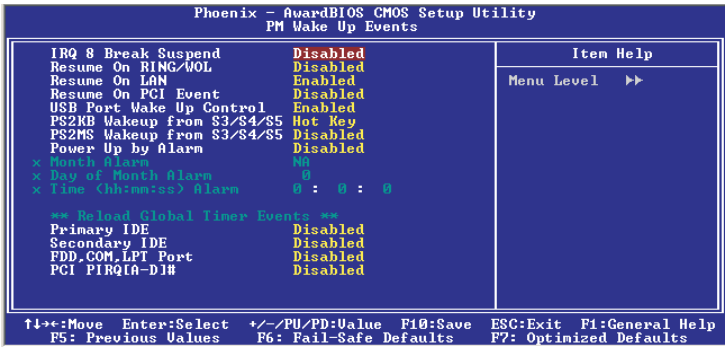
Keep Off When power returns after an AC power failure, the system's power is off. You must press the Power button to power-on the system.

Turn On When power returns after an AC power failure, the system will automatically power-on.

Last State When power returns after an AC power failure, the system will return to the state where you left off before power failure occurs. If the system's power is off when AC power failure occurs, it will remain off when power returns. If the system's power is on when AC power failure occurs, the system will power-on when power returns.

3.1.5.12 PM Wake Up Events

Move the cursor to this field and press <Enter>. The following screen will appear.


Phoenix – AwardBIOS CMOS Setup Utility
PM Wake Up Events
IRQ 8 Break Suspend Disabled
Resume On RING/WOL Disabled
Resume On LAN Enabled
Resume On PCI Event Disabled
USB Port Wake Up Control Enabled
PS2KB Wakeup from S3/S4/S5 Hot Key
PS2MS Wakeup from S3/S4/S5 Disabled
Power Up by Alarm Disabled
x Month Alarm NA
x Day of Month Alarm 0
x Time (hh:mm:ss) Alarm 0 : 0 : 0
** Reload Global Timer Events **
Primary IDE Disabled
Secondary IDE Disabled
FDD,COM,LPT Port Disabled
PCI PIRQ[A-D]# Disabled
Item Help
Menu Level ▶▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

IRQ 8 Break Suspend

When this field is enabled, access to IRQ 8 will cause the system to wake up from the Suspend mode.

Resume On RING/WOL

This field is used to enable or disable the Wake-On-Ring and Wake-On-LAN function.

- Wake-On-Ring - When enabled, the system will power-on to respond to calls coming from an external modem.
- Wake-On-LAN - When enabled, the system will allow the network to power-on a Soft Power Down (Soft-Off) PC. However, if your system is in the Suspend mode, you can wake up the system only through an IRQ or DMA interrupt.

Resume On LAN

Set this field to Enabled to wake up the system via the onboard LAN.

Resume On PCI Event

Enabled This field should be set to Enabled only if your PCI card such as LAN card or modem card uses the PCI PME (Power Management Event) signal to remotely wake up the system. Access to the LAN card or PCI card will cause the system to wake up. Refer to the card's documentation for more information.

Disabled The system will not wake up despite access to the PCI card.

USB Port Wake Up Control

This field, when enabled, allows you to use a USB device to wake up the system.

PS2KB Wakeup From S3/S4/S5

This field allows you to use the PS/2 keyboard to wake up the system from the S3/S4/S5 state.

Disabled Disables the keyboard wake up function.

Any Key Use any keyboard keys to wake up the system from the S3/S4/S5 state.

Hot Key Use any of the function keys, between F1 and F12, to wake up the system from the S3/S4/S5 state.

Password Use a password to wake up the system from the S3/S4/S5 state. Select this option and press <Enter>. Enter your password. You can enter up to 5 characters. Type in exactly the same password to confirm, then press <Enter>.

Important:

If you forgot the password, you must power-off the system, unplug the power cord and clear the CMOS data. Follow the steps in the "Jumper Settings for Clearing CMOS Data" section in chapter 2.

PS2MS Wakeup from S3/S4/S5

This field allows you to use the PS/2 mouse to wake up the system from the S3/S4/S5 state.

Disable Disables the PS/2 mouse wake up function.

Click Click the PS/2 mouse to wake up the system.

Move & Click Move and click the PS/2 mouse to wake up the system.

Power Up By Alarm

Enabled When Enabled, you can set the date and time you would like the Soft Power Down (Soft-Off) PC to power-on in the "Month Alarm", "Day of Month Alarm" and "Time (hh:mm:ss) Alarm" fields. However, if the system is being accessed by incoming calls or the network prior to the date and time set in these fields, the system will give priority to the incoming calls or network.

Disabled Disables the automatic power-on function. (default)

Month Alarm

This is used to select the month you would like the PC to power-on.

Day of Month Alarm

0	The system will power-on everyday according to the time set in the "Time (hh:mm:ss) Alarm" field.
1-31	Select a date you would like the system to power-on. The system will power-on on the set date, and time set in the "Time (hh:mm:ss) Alarm" field.

Time (hh:mm:ss) Alarm

This is used to set the time you would like the system to power-on. If you want the system to power-on everyday as set in the "Day of Month Alarm" field, the time set in this field must be later than the time of the RTC set in the Standard CMOS Features submenu.

Reload Global Timer Events

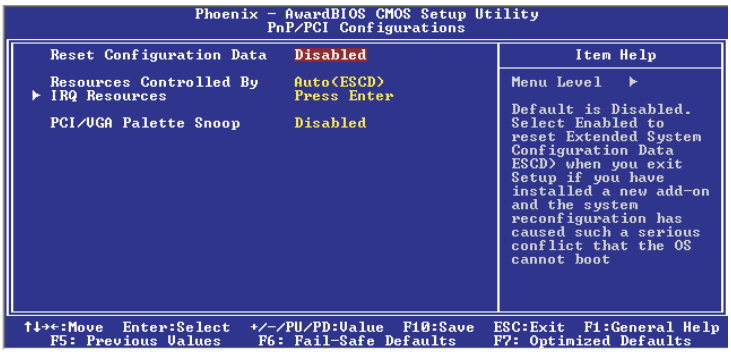
When enabled, access to the specified field (Primary IDE, Secondary IDE, FDD/COM/LPT Port or PCI PIRQ[A-D]#) will cause the system to wake up completely from the power management mode. When disabled, the system will not wake up from the power management mode despite access to the specified field.

3.1.5.13 Delay Prior To Thermal

This field is used to select the time that would force the CPU to a 50% duty cycle when it exceeds its maximum operating temperature therefore protecting the CPU and the system board from overheating to ensure a safe computing environment.

3.1.6 PnP/PCI Configurations

This section describes configuring the PCI bus system. It covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.


Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations
Reset Configuration Data
Disabled
Resources Controlled By
Auto(ESCD)
IRQ Resources
Press Enter
PCI/VGA Palette Snoop
Disabled
Item Help
Menu Level ▶
Default is Disabled. Select Enabled to reset Extended System Configuration Data ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

3.1.6.1 Reset Configuration Data

Enabled The BIOS will reset the Extended System Configuration Data (ESCD) once automatically. It will then recreate a new set of configuration data.

Disabled The BIOS will not reset the configuration data.

3.1.6.2 Resources Controlled By

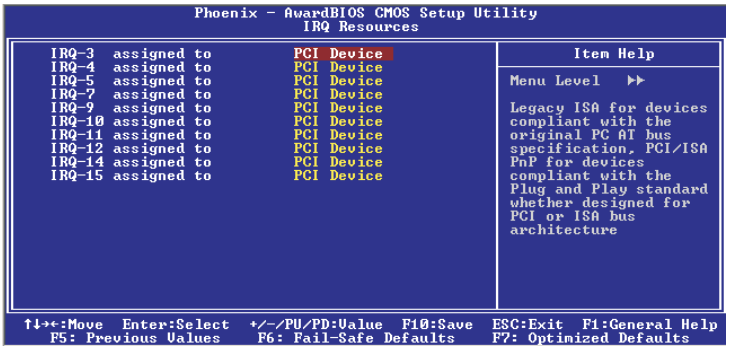
The Award Plug and Play BIOS has the capability to automatically configure all of the boot and Plug and Play compatible devices.

Auto The system will automatically detect the settings for you.

Manual Choose the specific IRQ in the "IRQ Resources" field respectively.

3.1.6.3 IRQ Resources

Move the cursor to this field and press <Enter>. This field is used to set each system interrupt to either Reserved or PCI Device.


Phoenix - AwardBIOS CMOS Setup Utility
IRQ Resources
IRQ-3 assigned to PCI Device
IRQ-4 assigned to PCI Device
IRQ-5 assigned to PCI Device
IRQ-7 assigned to PCI Device
IRQ-9 assigned to PCI Device
IRQ-10 assigned to PCI Device
IRQ-11 assigned to PCI Device
IRQ-12 assigned to PCI Device
IRQ-14 assigned to PCI Device
IRQ-15 assigned to PCI Device
Item Help
Menu Level ▸▸
Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

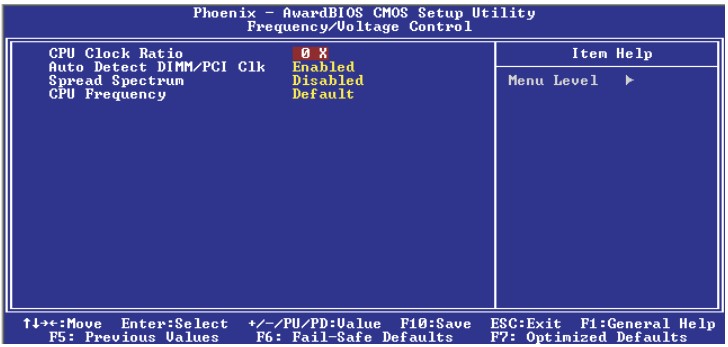
The settings on the screen are for reference only. Your version may not be identical to this one.

3.1.6.4 PCI/VGA Palette Snoop

This field determines whether the MPEG ISA/VESA VGA cards can work with PCI/VGA or not. The default value is Disabled.

Enabled MPEG ISA/VESA VGA cards work with PCI/VGA.
Disabled MPEG ISA/VESA VGA cards does not work with PCI/VGA.

3.1.7 Frequency/Voltage Control



The settings on the screen are for reference only. Your version may not be identical to this one.

3.1.7.1 CPU Clock Ratio

This field is used to select the CPU's frequency ratio.

Important:
The frequency ratio of some processors may have been locked by the manufacturer. If you are using this kind of processor, setting an extended ratio for the processor will have no effect. The system will instead use its factory default ratio.

3.1.7.2 Auto Detect DIMM/PCI Clk

When enabled, the system will automatically send clock signals to existing DIMM or PCI devices.

3.1.7.3 Spread Spectrum

Leave this field in its default setting. Do not alter this setting unless advised by an engineer or technician.

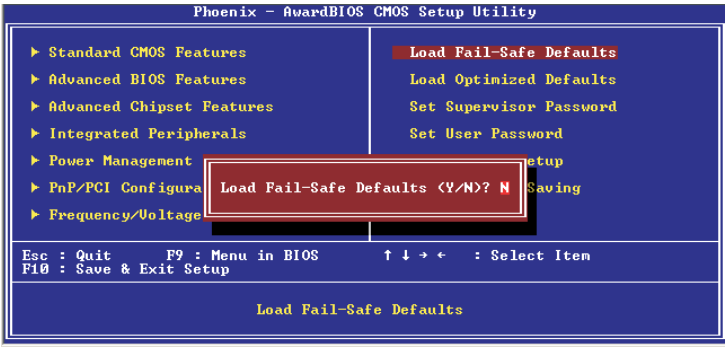
3.1.7.4 CPU Frequency

This field provides several options for selecting the external system bus clock of the processor.

Important:
Selecting an external bus clock other than the default setting may result to the processor's or system's instability and are not guaranteed to provide better system performance.

3.1.8 Load Fail-Safe Defaults

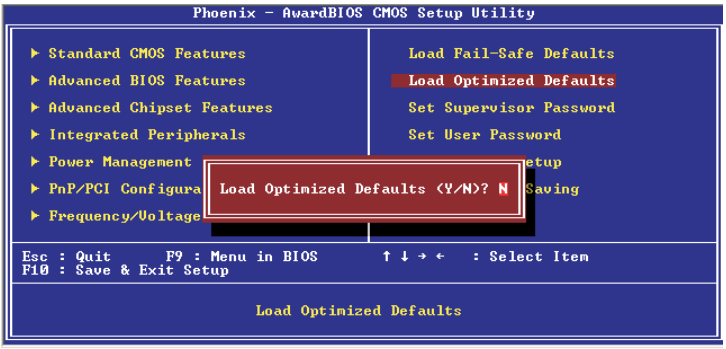
The "Load Fail-Safe Defaults" option loads the troubleshooting default values permanently stored in the ROM chips. These settings are not optimal and turn off all high performance features. You should use these values only if you have hardware problems. Highlight this option in the main menu and press <Enter>.



If you want to proceed, type <Y> and press <Enter>. The default settings will be loaded.

3.1.9 Load Optimized Defaults

The "Load Optimized Defaults" option loads optimized settings from the BIOS ROM. Use the default values as standard values for your system. Highlight this option in the main menu and press <Enter>.

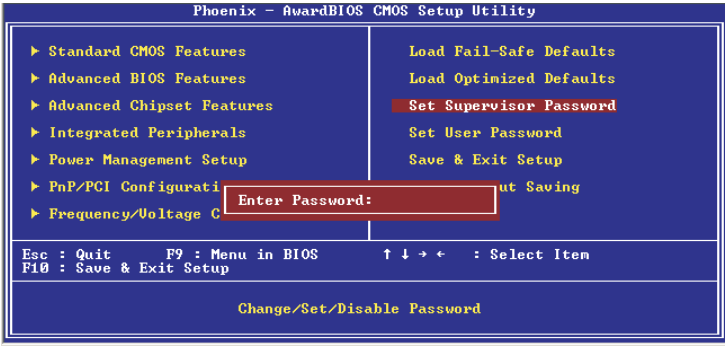


Type <Y> and press <Enter> to load the Setup default values.

3.1.10 Set Supervisor Password

If you want to protect your system and setup from unauthorized entry, set a supervisor's password with the "System" option selected in the Advanced BIOS Features. If you want to protect access to setup only, but not your system, set a supervisor's password with the "Setup" option selected in the Advanced BIOS Features. You will not be prompted for a password when you cold boot the system.

Use the arrow keys to highlight "Set Supervisor Password" and press <Enter>.



Type in the password. You are limited to eight characters. When done, the message below will appear:

Confirm Password:

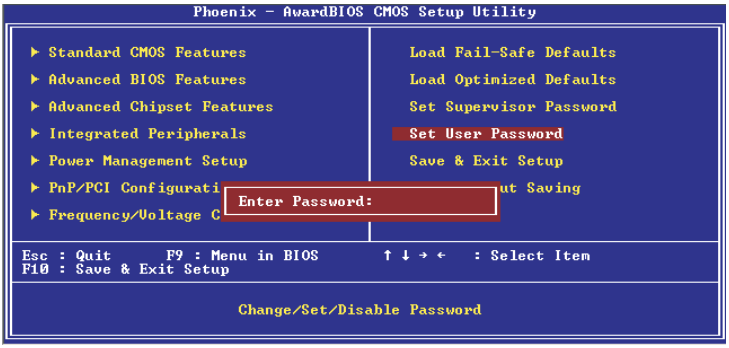
You are asked to verify the password. Type in exactly the same password. If you type in a wrong password, you will be prompted to enter the correct password again. To delete or disable the password function, highlight "Set Supervisor Password" and press <Enter>, instead of typing in a new password. Press the <Esc> key to return to the main menu.

3.1.11 Set User Password

If you want another user to have access only to your system but not to setup, set a user's password with the "System" option selected in the Advanced BIOS Features. If you want a user to enter a password when trying to access setup, set a user's password with the "Setup" option selected in the Advanced BIOS Features.

Using user's password to enter Setup allows a user to access only "Set User Password" that appears in the main menu screen. Access to all other options is denied.

Use the arrow keys to highlight "Set User Password" and press <Enter>.



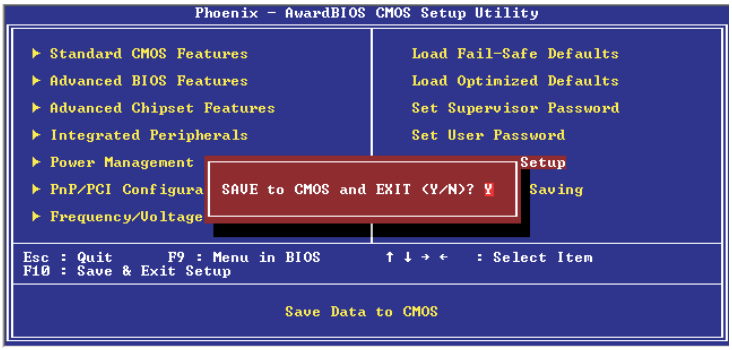
Type in the password. You are limited to eight characters. When done, the message below will appear:

Confirm Password:

You are asked to verify the password. Type in exactly the same password. If you type in a wrong password, you will be prompted to enter the correct password again. To delete or disable the password function, highlight "Set User Password" and press <Enter>, instead of typing in a new password. Press the <Esc> key to return to the main menu.

3.1.12 Save & Exit Setup

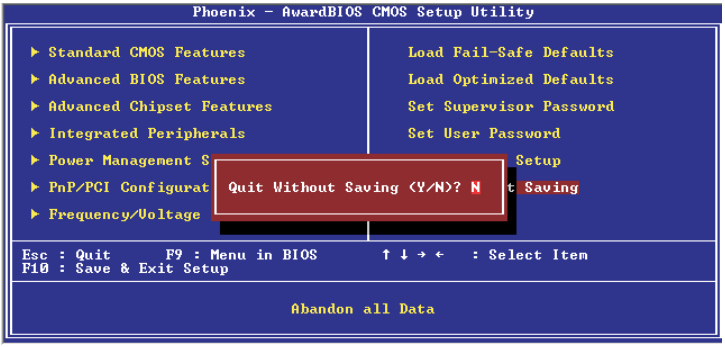
When all the changes have been made, highlight "Save & Exit Setup" and press <Enter>.



Type "Y" and press <Enter>. The modifications you have made will be written into the CMOS memory, and the system will reboot. You will once again see the initial diagnostics on the screen. If you wish to make additional changes to the setup, press <Ctrl> <Alt> <Esc> simultaneously or <Del> after memory testing is done.

3.1.13 Exit Without Saving

When you do not want to save the changes you have made, highlight "Exit Without Saving" and press <Enter>.



Type "Y" and press <Enter>. The system will reboot and you will once again see the initial diagnostics on the screen. If you wish to make any changes to the setup, press <Ctrl> <Alt> <Esc> simultaneously or <Del> after memory testing is done.

3.2 SiS RAID BIOS

The SiS RAID BIOS utility is used to configure and manage RAID on Serial ATA drives.

Important:
Before you run the SiS RAID BIOS utility, make sure to set the following fields in the Integrated Peripherals submenu of the Award BIOS.

1. *Set the "SiS Serial ATA Controller" field to "Enabled" ("SIS OnChip PCI Device" section).*
2. *Set the "SiS Serial ATA Mode" field to "RAID" ("SIS OnChip PCI Device" section).*

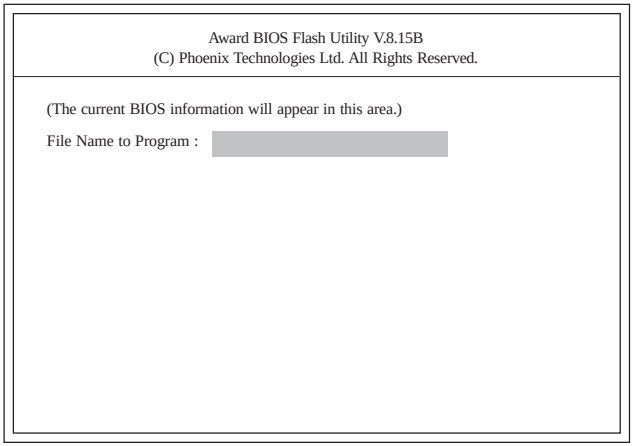
After you power up the system and all hard disk drives have been detected, the SiS RAID BIOS status message screen will appear. Press the <Ctrl> and <S> keys simultaneously to enter the utility. The utility allows you to build a RAID system using two Serial ATA (SATA) hard drives.

3.3 Updating the BIOS

To update the BIOS, you will need the new BIOS file and a flash utility, AWDFLASH.EXE. You can download them from DFI's web site or contact technical support or your sales representative.

Note:
AWDFLASH.EXE works only in DOS mode.

1. Save the new BIOS file along with the flash utility AWDFLASH.EXE to a floppy disk.
2. Reboot the system and enter the Award BIOS Setup Utility to set the first boot drive to "Floppy".
3. Save the setting and reboot the system.
4. After the system booted from the floppy disk, execute the flash utility by typing AWDFLASH.EXE. The following screen will appear.


Award BIOS Flash Utility V.8.15B
(C) Phoenix Technologies Ltd. All Rights Reserved.
(The current BIOS information will appear in this area.)
File Name to Program :

5. Type the new BIOS file name onto the gray area that is next to "File Name to Program" then press <Enter>.

6. The following will appear:

   Do You Want to Save BIOS (Y/N)

   This question refers to the current existing BIOS in your system. We recommend that you save the current BIOS and its flash utility; just in case you need to reinstall the BIOS. To save the current BIOS, press <Y> then enter the file name of the current BIOS. Otherwise, press <N>.

7. The following will then appear:

   Press "Y" to Program or "N" to Exit

8. Press <Y> to flash the new BIOS.

Chapter 4 - Supported Softwares

4.1 Desktop Management Interface (DMI)

The system board comes with a DMI built into the BIOS. DMI, along with the appropriately networked software, is designed to make inventory, maintenance and troubleshooting of computer systems easier. With DMI, a network administrator or MIS engineer can remotely access some information about a particular computer system without physically going to it. Quite often a service call may be unnecessary as the problem can be solved remotely.

The DMI utility in the BIOS automatically records various information about your system configuration. Information about the type and speed of CPU, type and amount of memory for each memory slot, BIOS revision level, types of add-in PCI boards and components, certain revision numbers of hardware installed, etc. are automatically detected and stored in the DMI pool, which is a part of the system board's Plug and Play BIOS. Additional information, such as ISA based peripherals, which may not be automatically detected, can be manually recorded in the DMI pool by using the Add DMI menu. The DMI pool data is then verified or updated whenever the system hardware or setup is altered.

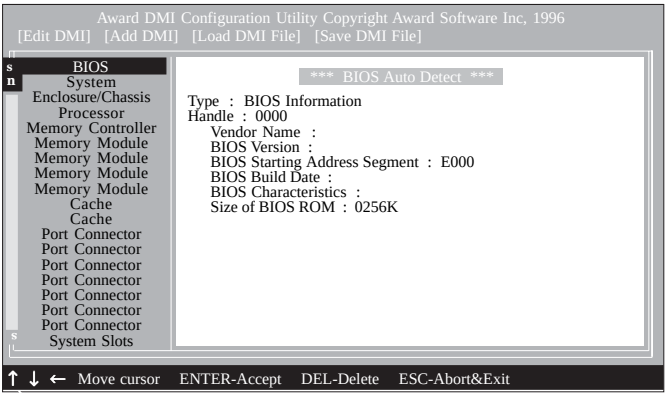
4.1.1 Running the DMI Utility

To run the DMI utility, type: DMICFG.EXE. You can download this utility from ftp.dfiusa.com - /utilities/DMI directory.

The DMI utility must run in real mode with at least 180K of base memory. Memory managers like HIMEM.SYS (required by Windows) must not be installed. You may do this by using one of the 3 methods listed below.

1. Boot up from a system diskette without the AUTOEXEC.BAT and CONFIG.SYS files,
2. "REM" HIMEM.SYS in the CONFIG.SYS, or
3. Press <F5> during bootup to bypass your AUTOEXEC.BAT and CONFIG.SYS files.

4.1.2 Using the DMI Utility



The four menus located on top of the DMI Configuration Utility screen are Edit DMI, Add DMI, Load DMI File and Save DMI File. Use the ← or → (left or right) arrow keys to select a menu from the Menu bar.

On the left side of the screen is a list of the system configuration items. Use the ↑ or ↓ (up or down) arrow keys to select an item.

The commands at the bottom of the screen will allow you to navigate through the various setup menus.

Edit DMI

1. Use the ← or → arrow keys to select the Edit DMI menu.
2. Highlight the item on the left screen that you would like to edit by using the ↑ or ↓ arrow keys, then press <Enter>.
3. The cursor will move to the screen you select allowing you to edit information. The screen will also display the auto-detected information.
4. Press <F10> to update the edited information into the flash ROM.

Add DMI

1. Use the ← or → arrow keys to select the Add DMI menu.
2. Highlight the item on the left screen that you would like to add by using the ↑ or ↓ arrow keys, then press <Enter>.
3. The cursor will move to the screen you select allowing you to enter information about the added item.
4. Press <F10> to save information into the flash ROM.

To view information about the added items, go to the Edit DMI menu.

Load DMI File

1. Use the ← or → arrow keys to select the Load DMI File menu.
2. The following message will appear.

   Press [Enter] to select DMI file for load

   Press <Enter>.
3. The DMI files will appear on the screen. Select the file you would like to load and press <Enter>.
4. The following message will appear.

   Do you want to execute? (Y/N)

   Type <Y>. All previous DMI structures will be destroyed and the new file will be saved into the flash ROM.

Save DMI File

1. Use the ← or → arrow keys to select the Save DMI File menu.
2. The following message will appear.

   Press [Enter] to select DMI file for save

   Press <Enter>.
3. Enter the directory and filename under which you would like the DMI file saved.

4.2 Drivers, Utilities and Software Applications

The CD that came with the system board contains drivers, utilities and software applications required to enhance the performance of the system board.

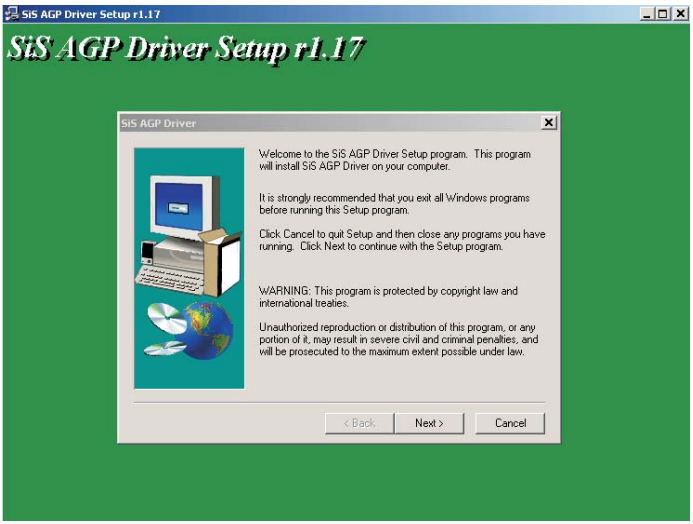
Insert the CD into a CD-ROM drive. The autorun screen (Mainboard Utility CD) will appear. If after inserting the CD, "Autorun" did not automatically start (which is, the Mainboard Utility CD screen did not appear), please go directly to the root directory of the CD and double-click "Setup".

4.2.1 SiS AGP Drivers

The SiS AGP driver includes the SIS VxD driver and SiS Miniport driver.

To install the AGP driver, please follow the steps below.

1. On the left side of the autorun screen, click the "CHIPSET" icon.
2. Click "SiS AGP Drivers" on the main screen. The screen below will appear.

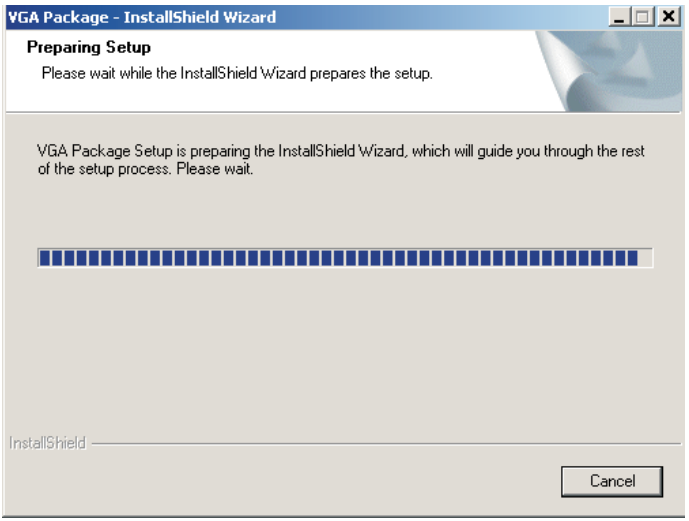

SiS AGP Driver Setup r1.17
SiS AGP Driver Setup r1.17
SiS AGP Driver
Welcome to the SiS AGP Driver Setup program. This program will install SiS AGP Driver on your computer.
It is strongly recommended that you exit all Windows programs before running this Setup program.
Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with the Setup program.
WARNING: This program is protected by copyright law and international treaties.
Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.
< Back
Next >
Cancel

3. Follow the prompts on the screen to complete installation.
4. Restart the system.

4.2.2 SiS Graphics Drivers

To install the driver, please follow the steps below.

1. On the left side of the autorun screen, click the "GRAPHICS" icon.
2. Click "SiS Graphics Drivers" on the main screen. The screen below will appear.

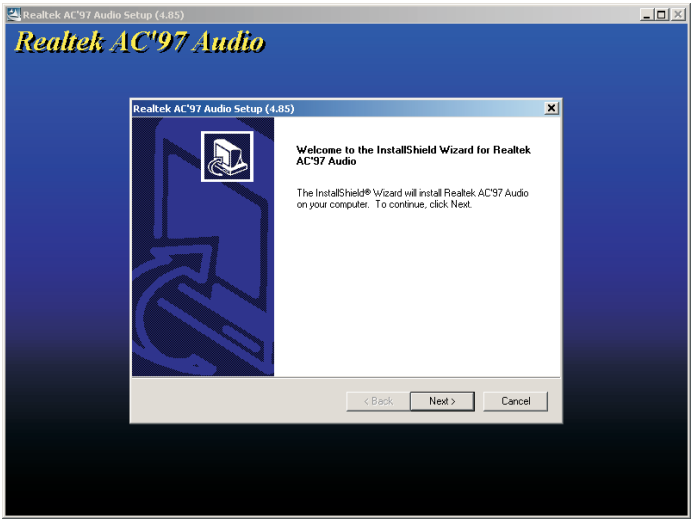

VGA Package - InstallShield Wizard
Preparing Setup
Please wait while the InstallShield Wizard prepares the setup.
VGA Package Setup is preparing the InstallShield Wizard, which will guide you through the rest of the setup process. Please wait.
InstallShield
Cancel

3. Follow the prompts on the screen to complete installation.
4. Restart the system.

4.2.3 Realtek Audio Drivers

To install the driver, please follow the steps below.

1. On the left side of the autorun screen, click the "AUDIO" icon.
2. Click "Realtek Audio Drivers" on the main screen. The screen below will appear.

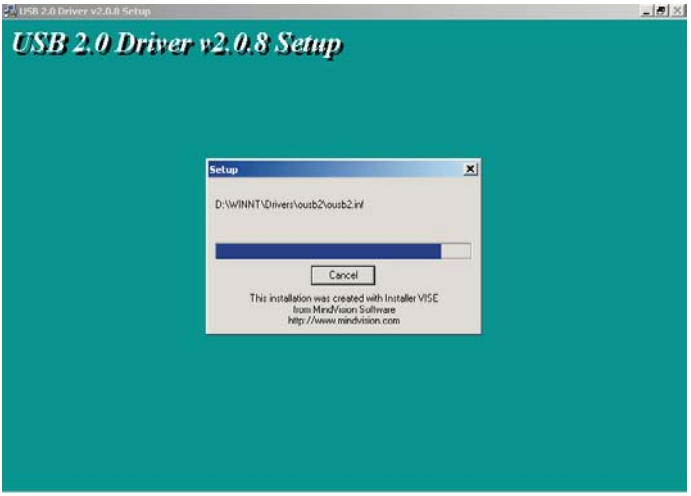

Realtek AC'97 Audio Setup (4.85)
Realtek AC'97 Audio
Realtek AC'97 Audio Setup (4.85)
Welcome to the InstallShield Wizard for Realtek AC'97 Audio
The InstallShield® Wizard will install Realtek AC'97 Audio on your computer. To continue, click Next.
< Back
Next >
Cancel

3. Follow the prompts on the screen to complete installation.
4. Restart the system.

4.2.4 SiS USB 2.0 Drivers

To install the driver, please follow the steps below.

1. On the left side of the autorun screen, click the "USB" icon.
2. Click "SiS USB 2.0 Drivers" on the main screen. The screen below will appear.



3. Follow the prompts on the screen to complete installation.
4. Restart the system.

Note:

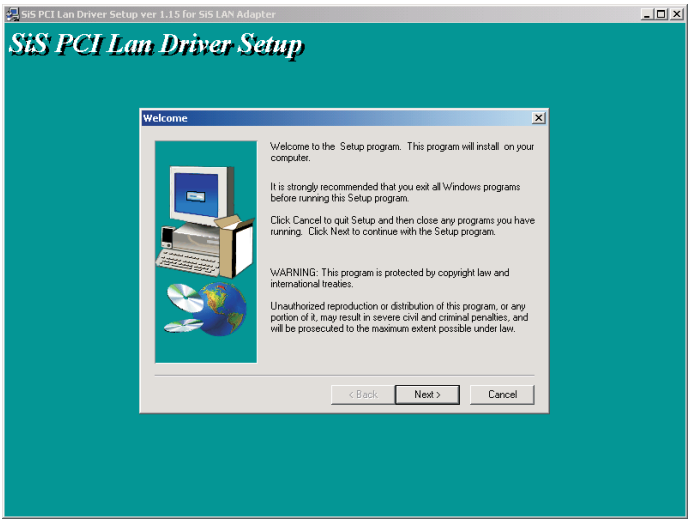
- *A "Yellow" mark will appear in Windows® 9x and Windows® ME's Device Manager because these operating systems does not support USB 2.0.*
- *If you are using Windows® XP, you must install the Windows Service Pack 1 USB 2.0 driver which comes available after you have installed the operating system.*
- *Currently, only Windows® 2000 supports USB 2.0.*

4.2.5 SiS LAN Drivers

To install the driver, please follow the steps below.

1. On the left side of the autorun screen, click the "NETWORK" icon.

2. Click "SiS LAN Drivers" on the main screen. The screen below will appear.


SiS PCI Lan Driver Setup ver 1.15 for SiS LAN Adapter
SiS PCI Lan Driver Setup
Welcome
Welcome to the Setup program. This program will install on your computer.
It is strongly recommended that you exit all Windows programs before running this Setup program.
Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with the Setup program.
WARNING: This program is protected by copyright law and international treaties.
Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.
< Back
Next >
Cancel

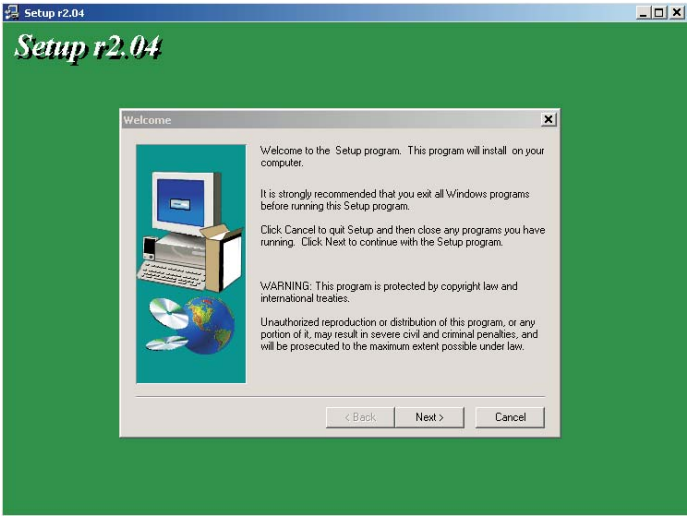
3. Follow the prompts on the screen to complete installation.

4. Restart the system.

4.2.6 SiS IDE Drivers

To install the IDE driver, please follow the steps below.

1. On the left side of the autorun screen, click the "TOOLS" icon.
2. Click "SiS IDE Drivers" on the main screen. The screen below will appear.


Setup r2.04
Setup r2.04
Welcome
Welcome to the Setup program. This program will install on your computer.
It is strongly recommended that you exit all Windows programs before running this Setup program.
Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with the Setup program.
WARNING: This program is protected by copyright law and international treaties.
Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.
< Back
Next >
Cancel

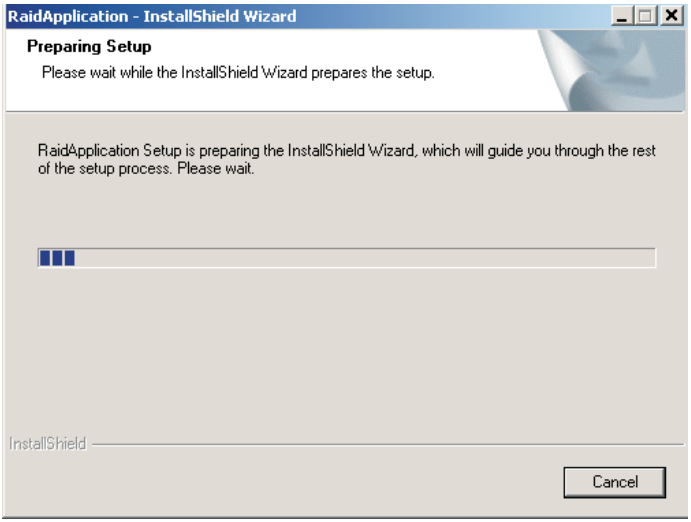
3. Follow the prompts on the screen to complete installation.
4. Restart the system.

4.2.7 SiS RAID Drivers (661FX-MLV only)

If the Serial ATA drives connected to the SATA 1 and SATA 2 connectors will be configured as RAID, you must install the SiS RAID drivers.

1. On the left side of the autorun screen, click the "TOOLS" icon.

2. Click "SiS RAID Drivers" on the main menu. The screen below will appear.


RaidApplication - InstallShield Wizard
Preparing Setup
Please wait while the InstallShield Wizard prepares the setup.
RaidApplication Setup is preparing the InstallShield Wizard, which will guide you through the rest of the setup process. Please wait.
InstallShield
Cancel

The installation procedure will lead you to install the driver from a diskette.

Important Notice for Windows XP/2000 and SATA RAID Users

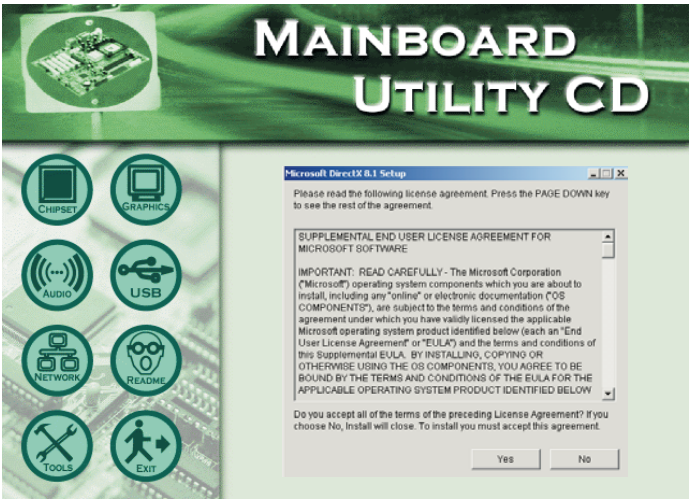
If you are (1) using a SATA drive to install the Windows XP/2000 operating system or (2) you are configuring RAID on SATA drives, you must install the SATA drivers from a diskette whenever you are prompted by the system to install the drivers.

The SATA drivers are contained in the CD that came with the system board. Prepare a blank formatted diskette then copy all the SATA driver files from the RAIDFLOPPY directory of the CD into a blank diskette. You can now use the diskette to install the drivers.

4.2.8 Microsoft DirectX 8.1

To install, please follow the steps below.

1. On the left side of the autorun screen, click the "TOOLS" icon.
2. Click "Microsoft DirectX 8.1" on the main screen. The screen below will appear.


MAINBOARD
UTILITY CD
CHIPSET
GRAPHICS
AUDIO
USB
NETWORK
README
TOOLS
EXIT
Microsoft DirectX 8.1 Setup
Please read the following license agreement. Press the PAGE DOWN key to see the rest of the agreement.
SUPPLEMENTAL END USER LICENSE AGREEMENT FOR MICROSOFT SOFTWARE
IMPORTANT: READ CAREFULLY - The Microsoft Corporation ("Microsoft") operating system components which you are about to install, including any "online" or electronic documentation ("OS COMPONENTS"), are subject to the terms and conditions of the agreement under which you have validly licensed the applicable Microsoft operating system product identified below (each an "End User License Agreement" or "EULA") and the terms and conditions of this Supplemental EULA. BY INSTALLING, COPYING OR OTHERWISE USING THE OS COMPONENTS, YOU AGREE TO BE BOUND BY THE TERMS AND CONDITIONS OF THE EULA FOR THE APPLICABLE OPERATING SYSTEM PRODUCT IDENTIFIED BELOW
Do you accept all of the terms of the preceding License Agreement? If you choose No, Install will close. To install you must accept this agreement.
Yes
No

3. Click "Yes" to continue.
4. Follow the prompts on the screen to complete installation.
5. Restart the system.

4.3 Installation Notes

1. "Autorun" ONLY supports the Windows® 98, Windows® 98 SE, Windows® ME, Windows® 2000, and Windows® XP operating systems. If after inserting the CD, "Autorun" did not automatically start (which is, the Main Board Utility CD screen did not appear), please go directly to the root directory of the CD and double-click "Setup".

2. All steps or procedures to install software drivers are subject to change without notice as the softwares are occassionally updated. Please go to DFI's web site at "http://www.dfi.com/support1/download2.asp" for the latest version of the drivers or software applications.

Appendix A - Enabling Hyper-Threading Technology

A.1 Enabling Hyper-Threading Technology

To enable the functionality of the Hyper-Threading Technology, please follow the requirements and steps below. Basically, the following presumes that you have already installed an Intel® Pentium® 4 Processor with Hyper-Threading Technology.

1. The system requires a minimum of 300 Watt ATX 12V power supply.

2. Aside from installing a CPU fan on the Intel® Pentium® 4 Processor with Hyper-Threading Technology, make sure to install cooling fans. The system requires adequate airflow throughout the chassis to prevent overheating the processor.

3. The "Hyper-Threading Technology" field in the Advanced BIOS Features submenu of the Award BIOS setup will appear. Make sure this field is set to Enabled.

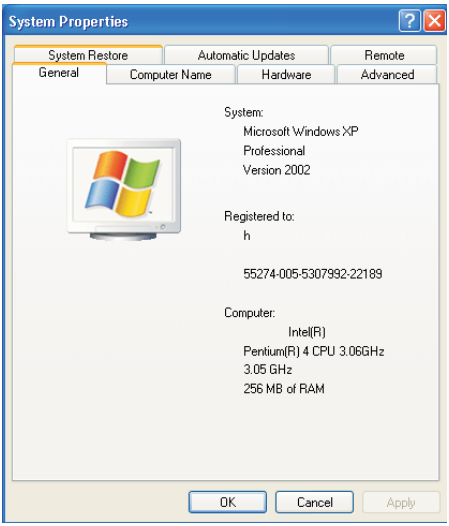
4. Currently, only Windows® XP supports the Hyper-Threading Technology. If this OS has been previously installed, you must **REINSTALL** it.

5. After installing Windows® XP, please check the following to ensure that the operating system has been properly installed.

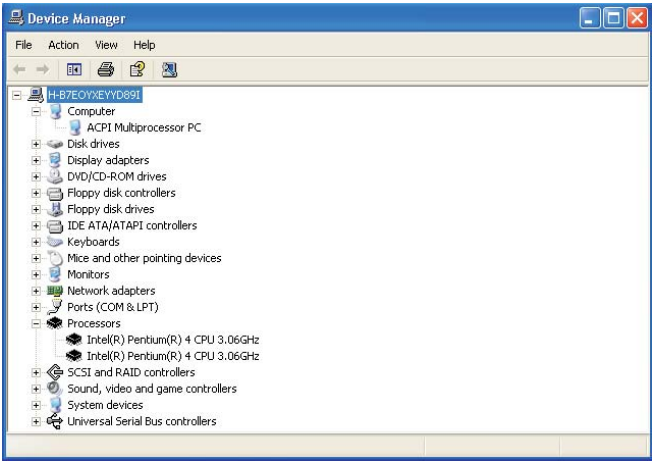
    a. Click Start, point to Settings then click Control Panel.

    b. Double-click the System icon. The System Properties dialog box will appear.

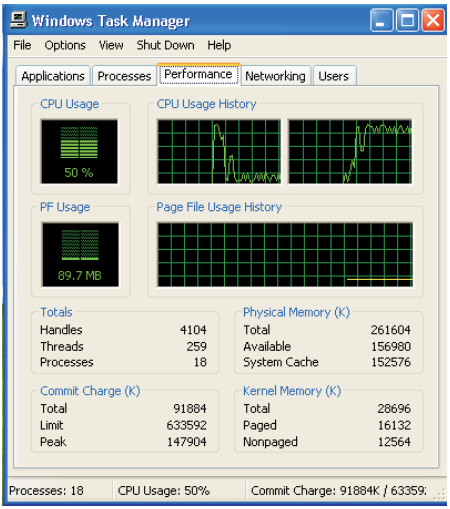
c. Click the General tab. The processor shown under Computer should resemble the one shown below.



d. Now click the Hardware tab then click Device Manager. The items shown under Computer and Processors should resemble the ones shown below.



e. Lastly, press the <Ctrl> <Alt> and <Del> keys simultaneously. The Windows Task Manager dialog box will appear. Click the Performance tab. The diagram under CPU Usage History should resemble the one shown below.



Appendix B - Using the Suspend to RAM Function

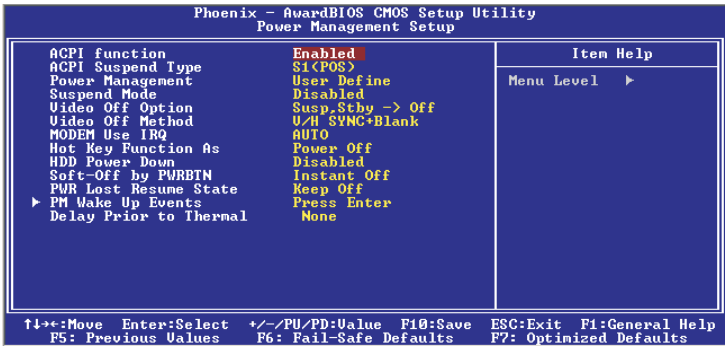
B.1 Using the Suspend to RAM Function

If you are using the Windows® 98 operating system, please follow the steps below.

1. Select "Power Management Setup" in the main menu screen and press <Enter>.

2. In the "ACPI Function" field, select "Enabled".

3. In the "ACPI Suspend Type" field, select "S3(STR)".


Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup
ACPI function Enabled
ACPI Suspend Type S1(POS)
Power Management User Define
Suspend Mode Disabled
Video Off Option Susp,Stby -> Off
Video Off Method V/H SYNC+Blank
MODEM Use IRQ AUTO
Hot Key Function As Power Off
HDD Power Down Disabled
Soft-Off by PWRBTN Instant Off
PWR Lost Resume State Keep Off
PM Wake Up Events Press Enter
Delay Prior to Thermal None
Item Help
Menu Level
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

4. Press <Esc> to return to the main menu.

5. Select "Save & Exit Setup" and press <Enter>. Type <Y> and press <Enter>.

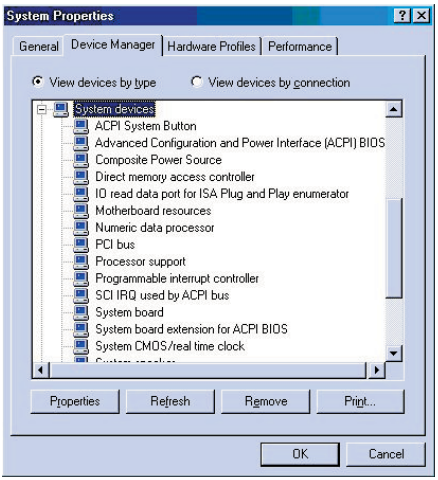
6. Install Windows® 98 by typing the following parameter. This is to ensure that the ACPI function is supported.

   [drive]:>setup /p j

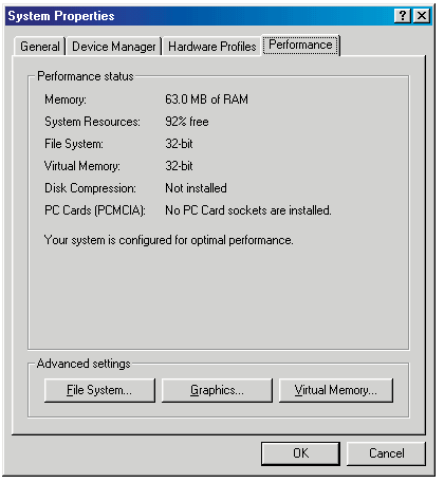
   If you have previously installed Windows® 98, you need to upgrade the system in order to support ACPI. Please contact Microsoft for upgrade information.

7. Boot Windows® 98. In the Windows® 98 desktop, click the Start button. Move the cursor to Settings, then click Control Panel.

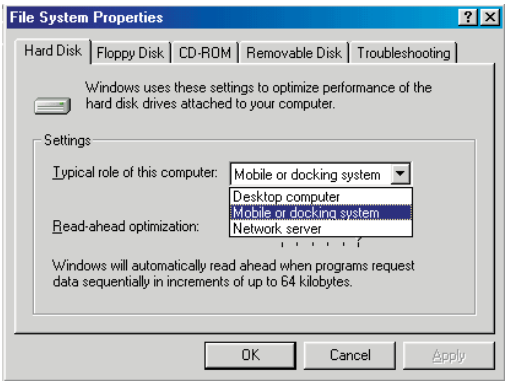
   To check whether ACPI was properly installed, double-click the System icon. In the System Properties dialog box, click the "Device Manager" tab. In "View devices by type", click "System devices".



8. Double-click the System icon. In the System Properties dialog box, click the Performance tab.

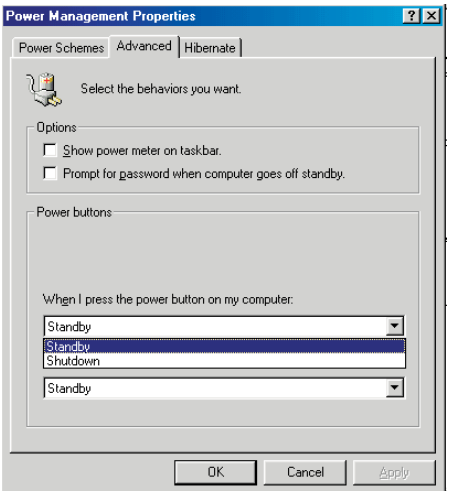


9. Click File System. In the "Typical role of this computer" field, select "Mobile or docking system". Click Apply, then click OK. Restart the computer.



10. Repeat step 7 to open the Control Panel dialog box. Double-click the Power Management icon.

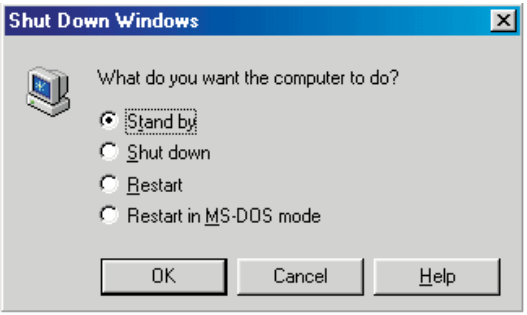
11. Click the Advanced tab. In the "When I press the power button on my computer" field, select "Standby".



12. After completing the steps above and you want to power-off the computer, you do not need to go through the process of closing files, applications and operating system. You can power-off the computer at once by pressing the power button or selecting "Standby" when you shut down Windows® 98.

    To power-on the computer, just press the power button. The operating session where you left off when you power-off the computer will resume in not more than 8 seconds.

    If you have changed the color or resolution (in the Display Properties dialog box), do not apply the settings without re-starting. You must restart the computer.



Important:
If you are unable to use the Suspend to RAM function (after performing the steps above in Windows® 98 or when you are in Windows® 2000/ME/XP), please check whether your add-in cards or devices support this function. If this function is not supported, you need to download the appropriate driver from their respective website.

Appendix C - System Error Message

When the BIOS encounters an error that requires the user to correct something, either a beep code will sound or a message will be displayed in a box in the middle of the screen and the message, PRESS F1 TO CONTINUE, CTRL-ALT-ESC or DEL TO ENTER SETUP, will be shown in the information box at the bottom. Enter Setup to correct the error.

C.1 POST Beep

There are two kinds of beep codes in the BIOS. One code indicates that a video error has occured and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by three short beeps. The other code indicates that a DRAM error has occured. This beep code consists of a single long beep.

C.2 Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list indicates the error messages for all Awards BIOSes:

CMOS BATTERY HAS FAILED

The CMOS battery is no longer functional. It should be replaced.

Caution:
Danger of explosion if battery incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the battery manufacturer's instructions.

CMOS CHECKSUM ERROR

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

DISPLAY SWITCH IS SET INCORRECTLY

The display switch on the mainboard can be set to either monochrome or color. This indicates the switch is set to a different

setting than indicated in Setup. Determine which setting is correct, either turn off the system and change the jumper or enter Setup and change the VIDEO selection.

FLOPPY DISK(S) fail (80)
Unable to reset floppy subsystem.

FLOPPY DISK(S) fail (40)
Floppy type mismatch.

Hard Disk(s) fail (80)
HDD reset failed.

Hard Disk(s) fail (40)
HDD controller diagnostics failed.

Hard Disk(s) fail (20)
HDD initialization error.

Hard Disk(s) fail (10)
Unable to recalibrate fixed disk.

Hard Disk(s) fail (08)
Sector Verify failed.

Keyboard is locked out - Unlock the key
The BIOS detects that the keyboard is locked. Keyboard controller is pulled low.

Keyboard error or no keyboard present
Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

Manufacturing POST loop
System will repeat POST procedure infinitely while the keyboard controller is pull low. This is also used for the M/B burn in test at the factory.

BIOS ROM checksum error - System halted
The checksum of ROM address F0000H-FFFFFH is bad.

Memory test fail
The BIOS reports memory test fail if the memory has error(s).

Appendix D - Troubleshooting

D.1 Troubleshooting Checklist

This chapter of the manual is designed to help you with problems that you may encounter with your personal computer. To efficiently troubleshoot your system, treat each problem individually. This is to ensure an accurate diagnosis of the problem in case a problem has multiple causes.

Some of the most common things to check when you encounter problems while using your system are listed below.

1. The power switch of each peripheral device is turned on.
2. All cables and power cords are tightly connected.
3. The electrical outlet to which your peripheral devices are connected is working. Test the outlet by plugging in a lamp or other electrical device.
4. The monitor is turned on.
5. The display's brightness and contrast controls are adjusted properly.
6. All add-in boards in the expansion slots are seated securely.
7. Any add-in board you have installed is designed for your system and is set up correctly.

Monitor/Display

If the display screen remains dark after the system is turned on:

1. Make sure that the monitor's power switch is on.
2. Check that one end of the monitor's power cord is properly attached to the monitor and the other end is plugged into a working AC outlet. If necessary, try another outlet.
3. Check that the video input cable is properly attached to the monitor and the system's display adapter.
4. Adjust the brightness of the display by turning the monitor's brightness control knob.

The picture seems to be constantly moving.

1. The monitor has lost its vertical sync. Adjust the monitor's vertical sync.
2. Move away any objects, such as another monitor or fan, that may be creating a magnetic field around the display.
3. Make sure your video card's output frequencies are supported by this monitor.

The screen seems to be constantly wavering.

1. If the monitor is close to another monitor, the adjacent monitor may need to be turned off. Fluorescent lights adjacent to the monitor may also cause screen wavering.

Power Supply

When the computer is turned on, nothing happens.

1. Check that one end of the AC power cord is plugged into a live outlet and the other end properly plugged into the back of the system.
2. Make sure that the voltage selection switch on the back panel is set for the correct type of voltage you are using.
3. The power cord may have a "short" or "open". Inspect the cord and install a new one if necessary.

Floppy Drive

The computer cannot access the floppy drive.

1. The floppy diskette may not be formatted. Format the diskette and try again.
2. The diskette may be write-protected. Use a diskette that is not write-protected.
3. You may be writing to the wrong drive. Check the path statement to make sure you are writing to the targeted drive.
4. There is not enough space left on the diskette. Use another diskette with adequate storage space.

Hard Drive

Hard disk failure.

1. Make sure the correct drive type for the hard disk drive has been entered in the BIOS.
2. If the system is configured with two hard drives, make sure the bootable (first) hard drive is configured as Master and the second hard drive is configured as Slave. The master hard drive must have an active/bootable partition.

Excessively long formatting period.

1. If your hard drive takes an excessively long period of time to format, it is likely a cable connection problem. However, if your hard drive has a large capacity, it will take a longer time to format.

Parallel Port

The parallel printer doesn't respond when you try to print.

1. Make sure that your printer is turned on and that the printer is on-line.
2. Make sure your software is configured for the right type of printer attached.
3. Verify that the onboard LPT port's I/O address and IRQ settings are configured correctly.
4. Verify that the attached device works by attaching it to a parallel port that is working and configured correctly. If it works, the printer can be assumed to be in good condition. If the printer remains inoperative, replace the printer cable and try again.

Troubleshooting

Serial Port

The serial device (modem, printer) doesn't output anything or is outputting garbled characters.

1. Make sure that the serial device's power is turned on and that the device is on-line.
2. Verify that the device is plugged into the correct serial port on the rear of the computer.
3. Verify that the attached serial device works by attaching it to a serial port that is working and configured correctly. If the serial device does not work, either the cable or the serial device has a problem. If the serial device works, the problem may be due to the onboard I/O or the address setting.
4. Make sure the COM settings and I/O address are configured correctly.

Keyboard

Nothing happens when a key on the keyboard was pressed.

1. Make sure the keyboard is properly connected.
2. Make sure there are no objects resting on the keyboard and that no keys are pressed during the booting process.

Mainboard

1. Make sure the add-in card is seated securely in the expansion slot. If the add-in card is loose, power off the system, re-install the card and power up the system.
2. Check the jumper settings to ensure that the jumpers are properly set.
3. Verify that all memory modules are seated securely into the memory sockets.
4. Make sure the memory modules are in the correct locations.
5. If the board fails to function, place the board on a flat surface and seat all socketed components. Gently press each component into the socket.
6. If you made changes to the BIOS settings, re-enter setup and load the BIOS defaults.